

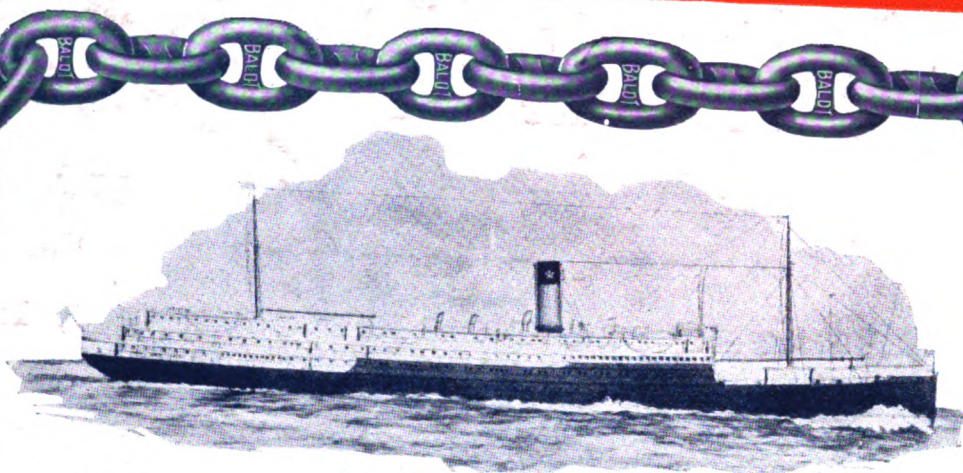
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Marine Review

*The National Publication Covering the Business of
Transportation by Water*

September, 1927



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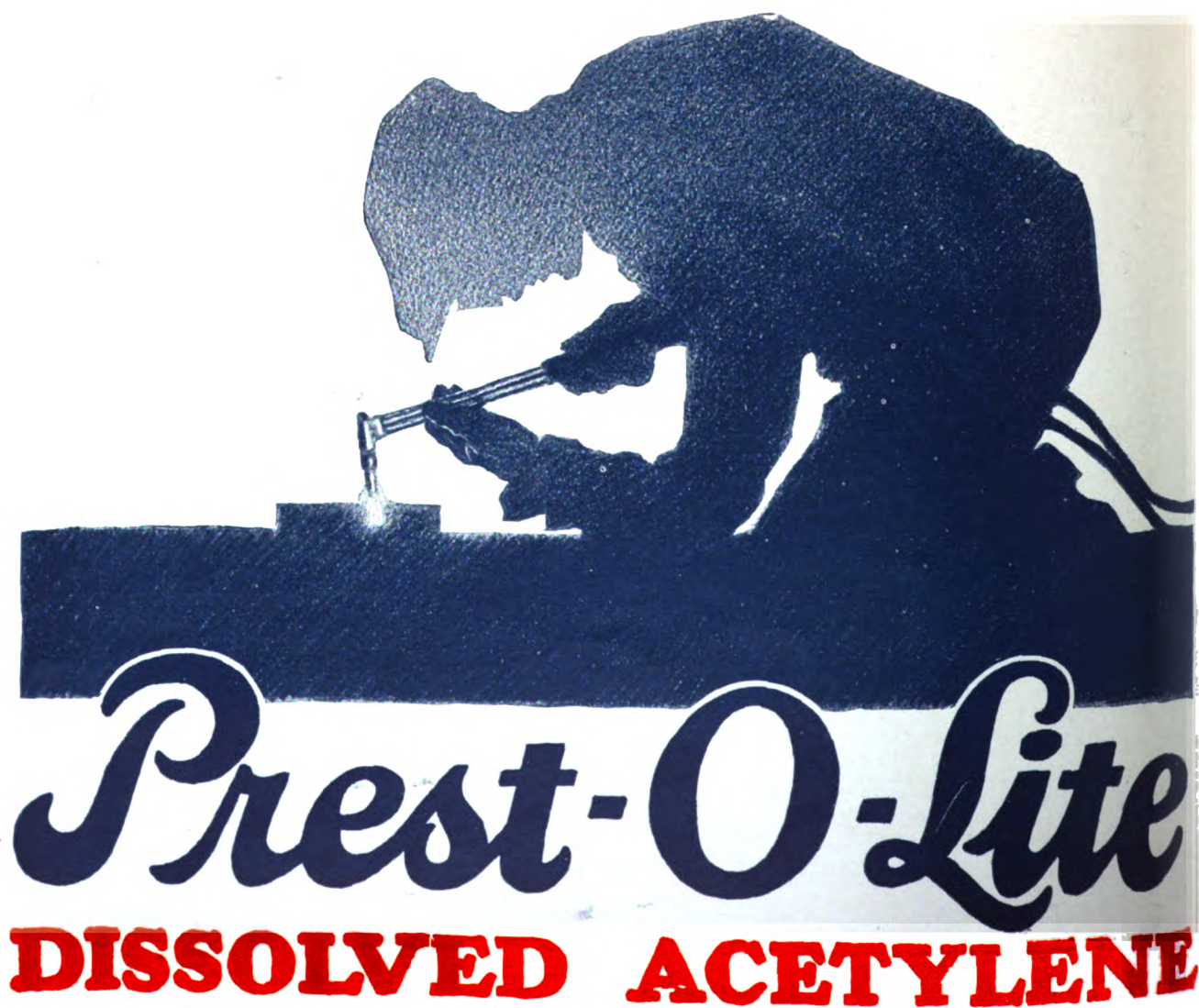
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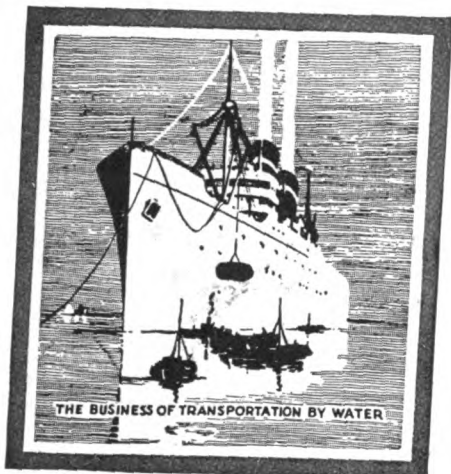
Marine Review

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Transportation by Water

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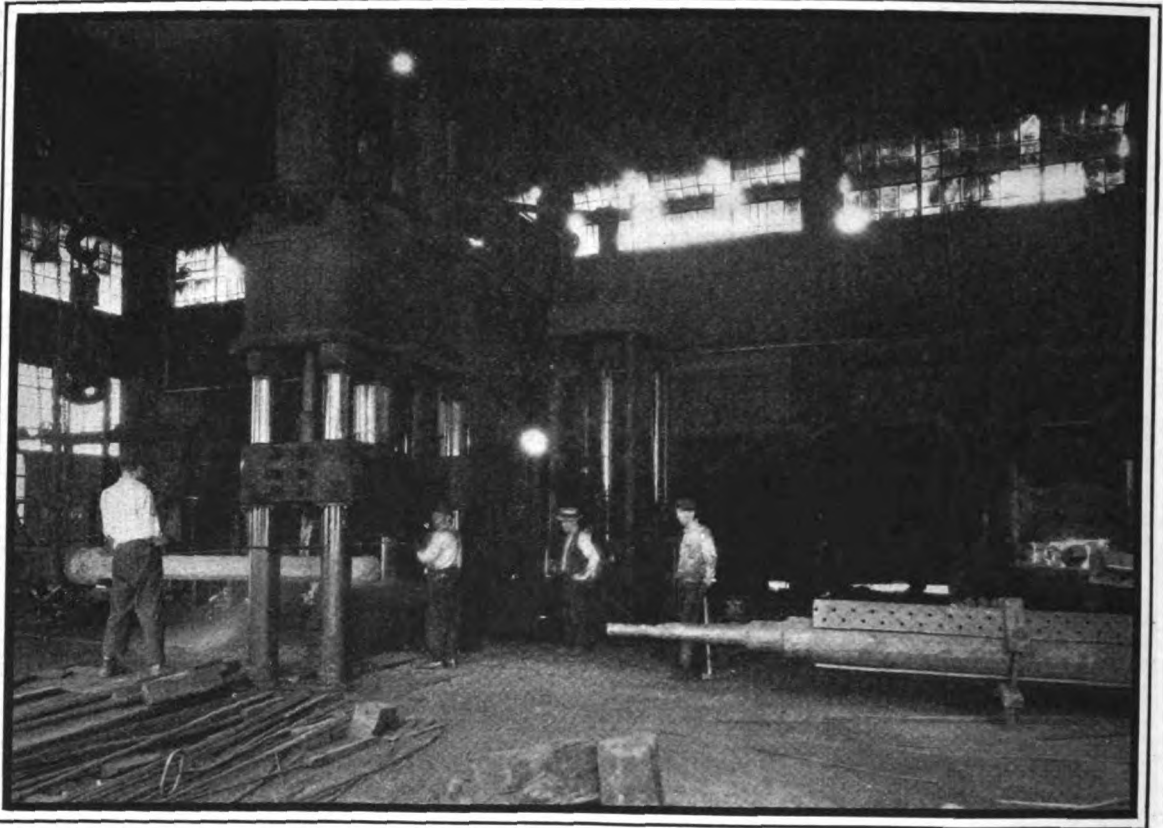
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A Thousand-Ton Forge Press at our Lorain Yard. Capacity for ingots up to 2 feet 6 inches in diameter. Used in making all kinds of engine forgings, shaft forgings, stern frames, shoes and rudder stocks.

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This is but one example of the complete *American* equipment and prepared-

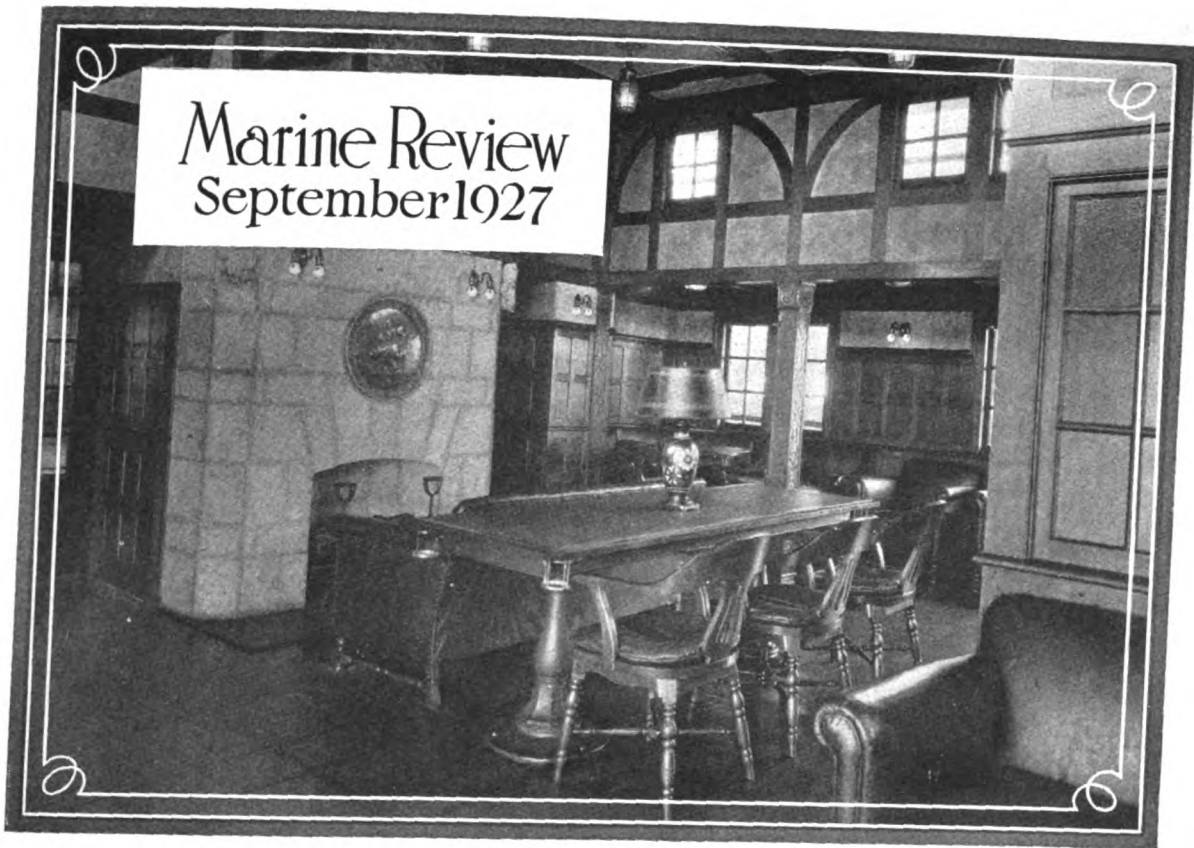
ness. We have the drawings and patterns of most ships on the Lakes. We have yards, dry docks—forge, foundry and machine shops—floating equipment and trained men—at seven strategic points. Everything required to build ships and repair them well and quickly.

It is a good policy to insist—as many ship operators do—that all your repair jobs be done at the nearest *American* yard. You will save delay and dollars.

*Note the location of our yards and shops—
all over the Lakes—as listed below*

The AMERICAN
} CLEVELAND American Ship Building Co. LORAIN American Ship Building Co. DETROIT Detroit Ship Building Co. BUFFALO Buffalo Dry Dock Company

Marine Review
September 1927



Smoking Room of the S. S. Yarmouth—A Striking Example of Good Design and Workmanship

New Passenger Liner Yarmouth Enters Boston-Nova Scotia Run

SO POPULAR has Nova Scotia become as a summer vacation country that the Eastern Steamship lines some time ago contracted for the building of two new ships especially for that trade. The first of the two, the YARMOUTH, was completed and put in service the first week in July to ply regularly between Boston and Yarmouth under the flag of the Boston and Yarmouth Steamship Co. The sister ship, EVANGELINE, will be finished at the builder's yard, the William Cramp & Sons Ship & Engine Building Co., in September and next summer she will inaugurate an entirely new service of two round trips per week between New York and Yarmouth, there connecting with special Yarmouth-Halifax passenger trains to achieve a through schedule of 33 hours between New York and Halifax—a time never before attained between these two cities by land or sea. While these two new ships have been built particularly for the Nova Scotian holiday trade, they are staunch ocean going ships holding highest classification in the American Bureau of Shipping, are certified for any service, and are capable of steaming 12 days with one fueling.

The Eastern lines have invested over four million dollars in this new property.

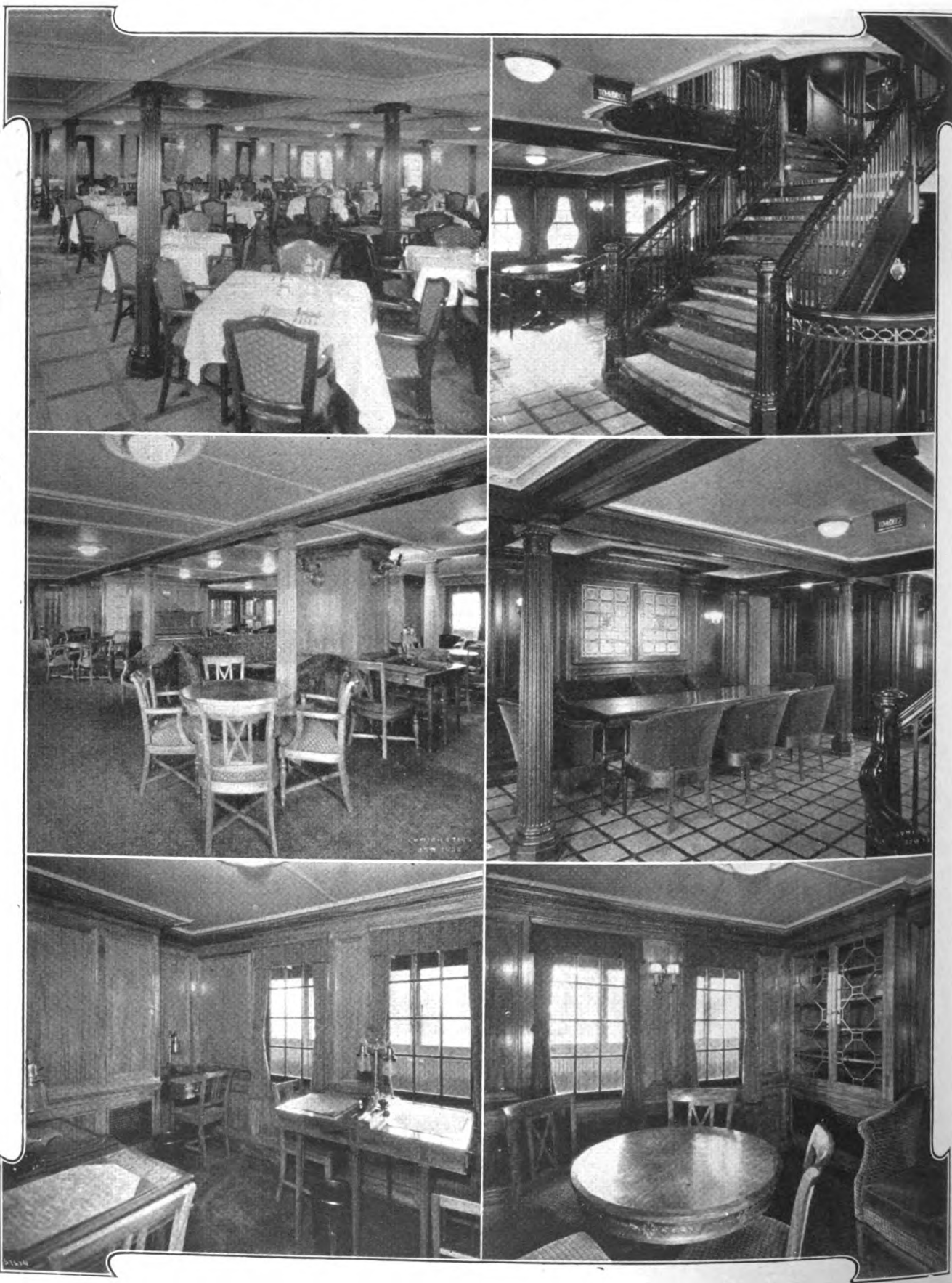
These ships were designed by Theodore E. Ferris, naval architect and marine engineer of New York, after personally looking into conditions at both the Boston and Yarmouth terminals. Mr. Ferris has spent his entire life in ship designing and construction and is responsible for most of the coastwise ships in service today.

In the standardization runs off Delaware Breakwater at the time of the trial trip of the S. S. YARMOUTH the ship made a speed of 18.6 knots, developing 7600 shaft horsepower with 28¾ inches of vacuum, at 163 revolutions per minute of the propellers.

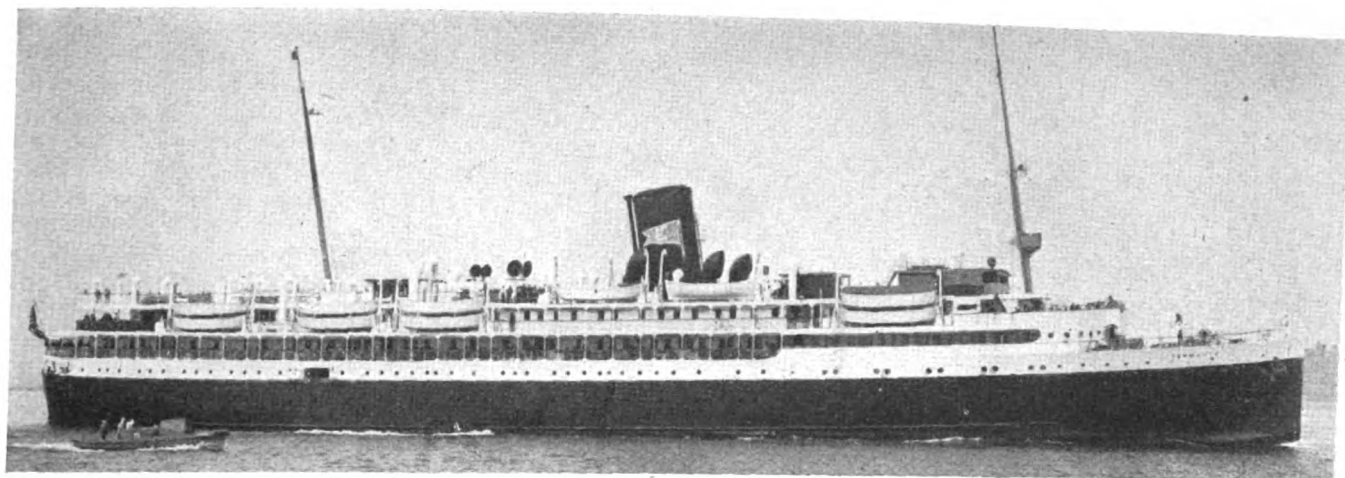
Following the custom in many transatlantic liners, the various decks of these vessels are designed by letters; for instance, the boat deck is known as A deck, the promenade deck as B deck, the upper deck as C deck, the main deck as D deck, the lower deck as E deck. The upper deck is the strength deck, is continuous for the full length of the ship, and is completely plated over.

The subdivision of spaces in the hull has been worked out to insure as far as practicable the

Public Rooms on the S. S. Yarmouth



INTERIOR VIEWS, S. S. YARMOUTH, RECENTLY COMPLETED PASSENGER LINER FOR THE NOVA SCOTIAN HOLIDAY TRADE—
 UPPER LEFT—DINING ROOM. UPPER RIGHT— LOUNGE AND STAIRWAY FROM "B" TO "A" DECK. CENTER LEFT—
 DRAWING ROOM. CENTER RIGHT—LOUNGE AND STAIRWAY FROM "B" TO "A" DECK. BOTTOM LEFT—WRITING
 ROOM. BOTTOM RIGHT—A CORNER OF THE LIBRARY—THESE PUBLIC ROOMS PRESENT GREAT SKILL
 IN DESIGN AND WORKMANSHIP



S. S. Yarmouth, New Eastern Steamship Liner Now in Service Between Boston and Yarmouth N. S.

safety of the ship and its passengers. This condition has been obtained by means of transverse bulkheads continued to the upper deck or the main deck, and by making such portions of deck plating watertight where bulkheads are stepped. Where these bulkheads are pierced by doorways, below upper deck, such doors are hinged watertight doors, worked from the door itself, except shaft tunnel doors, and the doors in the bulkhead between engine room and fire room, the door in bulkhead dividing the firerooms, the two doors in the forward fire room bulkhead, fitted for coal burning in case ships go to coal burning at a future date. All of these doors are geared doors operated from the platform in the engine room, in fire room, and for the forward doors from the deck over.

General Structural Description

General particulars of the YARMOUTH and EVANGELINE are: length on deck over stem and stern, 377 feet 3 inches; length for displacement on 18-foot water line, 378 feet; length between perpendiculars on 15-foot waterline, 365 feet; beam molded, 55 feet 6 inches; depth molded to

upper deck at side, 23 feet 6 inches; maximum load draft molded (scantling draft), 20 feet; designed load draft molded, 18 feet. The displacement in sea water at 18 feet molded draft is 5880 long tons. Block coefficient on displacement length of 378 feet is .545. Designed shaft horsepower at 157 revolutions per minute is 7500 plus an excess of 10 per cent overload. Steaming radius, burning oil at 18 knots speed with 940 tons of oil is 11½ days, or 4950 nautical miles. Speed at 18-foot mean load draft (oil burning) is 18 knots. Deadweight capacity on maximum load draft, including freight, fuel oil, stores, water, passengers, crew and effects, is about 1800 tons.

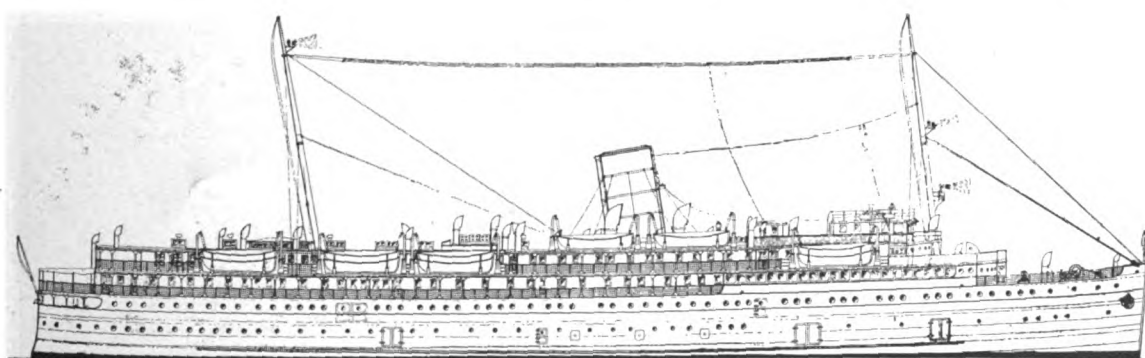
These vessels are of the three deck express passenger and freight type, with continuous lower promenade deck, twin screws, cruiser stern, bulbous bow, with stem raked forward and are fitted with a complete double bottom. They have lower, main, upper, promenade, and boat decks; the lower, main and upper decks are fully steel plated; the promenade deck is partially plated. Upper deck at after end, promenade

deck outside of house, and boat deck outside of house have calked wood decks.

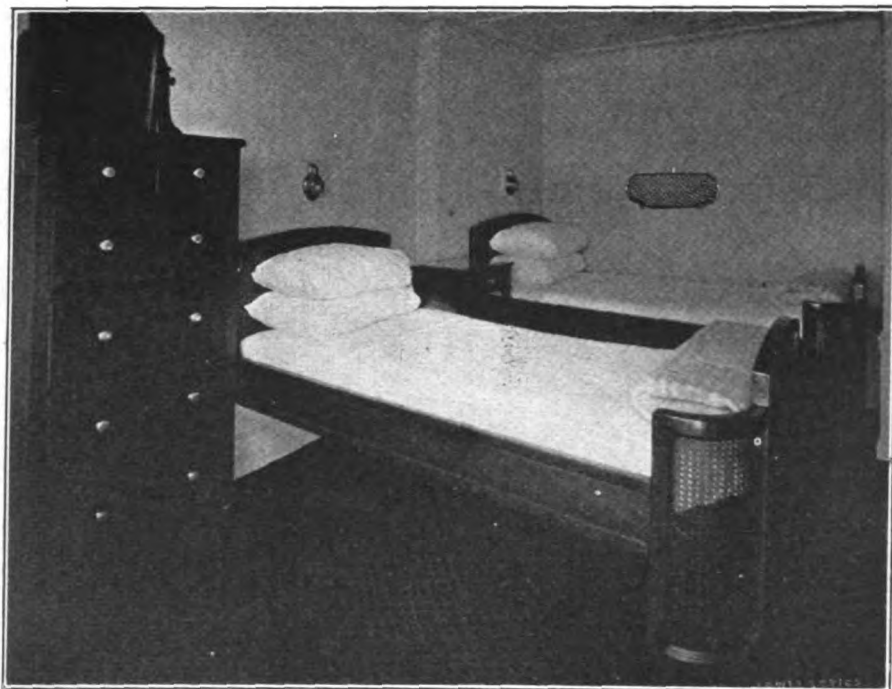
The forward lower and main decks in freight space, are steel decks, except in sailors' quarters where magnesite floor covering is laid. The lower deck aft in berth travel space is covered with a magnesite floor. In chilled freight spaces insulation is fitted. The main deck midships in living rooms, mess rooms, etc., and aft in stateroom spaces have magnesite floor covering on the steel deck which serves where required as a finishing tile. The freight spaces aft, baggage and mail room, and steering engine room have bare steel decks. The upper deck all fore and aft has a magnesite floor laid on the steel deck and this floor is scored and laid in different colors to serve as a finishing tile.

Electric Freight Elevators

On the promenade deck and the boat deck inside of house a joiner deck is laid and covered with canvas. Deck forming top of houses on boat deck, also the bridge, top of wheel and chart house and top of wireless house is a joiner deck cov-



Outboard Profile of the S. S. Yarmouth Recently Completed at Wm. Cramp & Sons S. & E. Building Co.



Interior De Luxe Rooms with Private Bath

ered with canvas with felt laid under, except for top of wheel, chart and wireless house where no felt is laid under the canvas. The vessels have two steel pole masts and the foremast is fitted with a lookout platform. There is one smokestack. Three hatch openings with electric freight elevators are fitted through main and lower decks. There are three freight ports between main and upper decks on each side; also one stowing port off of main deck amidships; one exit port off of upper deck aft of dining saloon, and one main passenger entrance port on each side.

Also, off of main deck amidships there are three coaling ports and trunks for use in case ship goes to coal burning at a future date. There are eight watertight steel bulkheads; these bulkheads extend up to upper deck, except the forward engine room bulkhead which extends up to main deck, forming seven transverse watertight compartments exclusive of peaks. Engine and boiler enclosures are built of steel extending to above top of boat deck house. Deck houses on promenade and boat decks are built of steel. Forward across promenade deck with supporting ends at side is a steel weather shelter bulkhead, with steel wind screen at front for crew's entrance up to boat deck. Wheel, chart and wireless houses are built of wood.

Ships are fitted with mechanical ventilation, for living quarters, mess rooms, storerooms, toilets and wash rooms, etc., on main deck amidships. Mechanical ventilation is provided for main engine room, ice machine and

dynamo rooms, also for passenger staterooms inboard and on center line of ship on upper deck, including dining saloon and toilets. After ends of ships are provided with mechanical ventilation for berth travel space, waiters' quarters, passenger staterooms on main deck aft, passenger staterooms inboard and on centerline of ship aft on upper deck, and other spaces including steering engine room, toilets, purser's office, and room, assistant purser's room, barber shop, and coat room. Main galley and pantry, also officers' and petty officers, mess rooms including serving pantry, are mechanically ventilated by sepa-

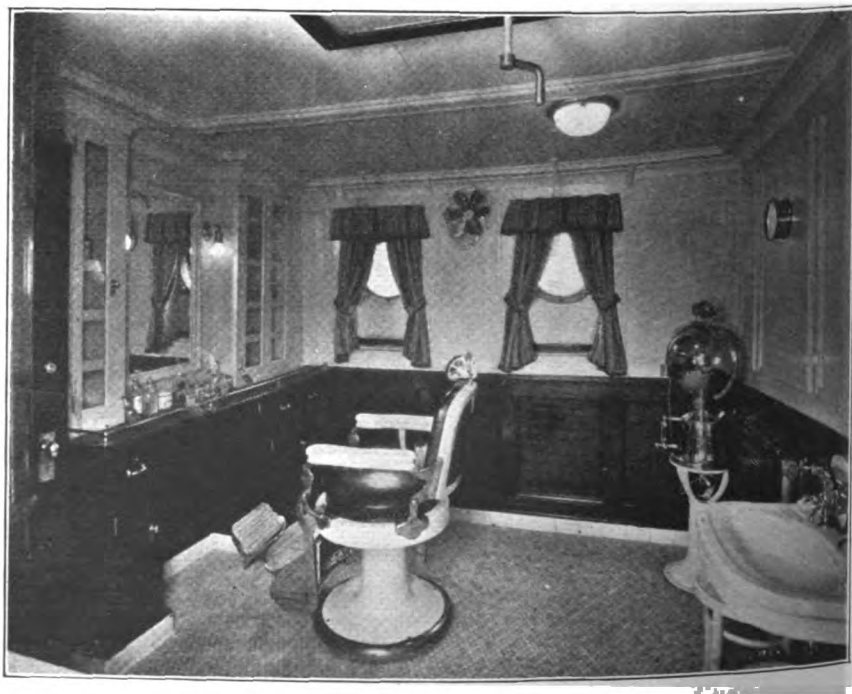
rate exhaust system only, with fans placed on boat deck.

Location of Crew's Quarters

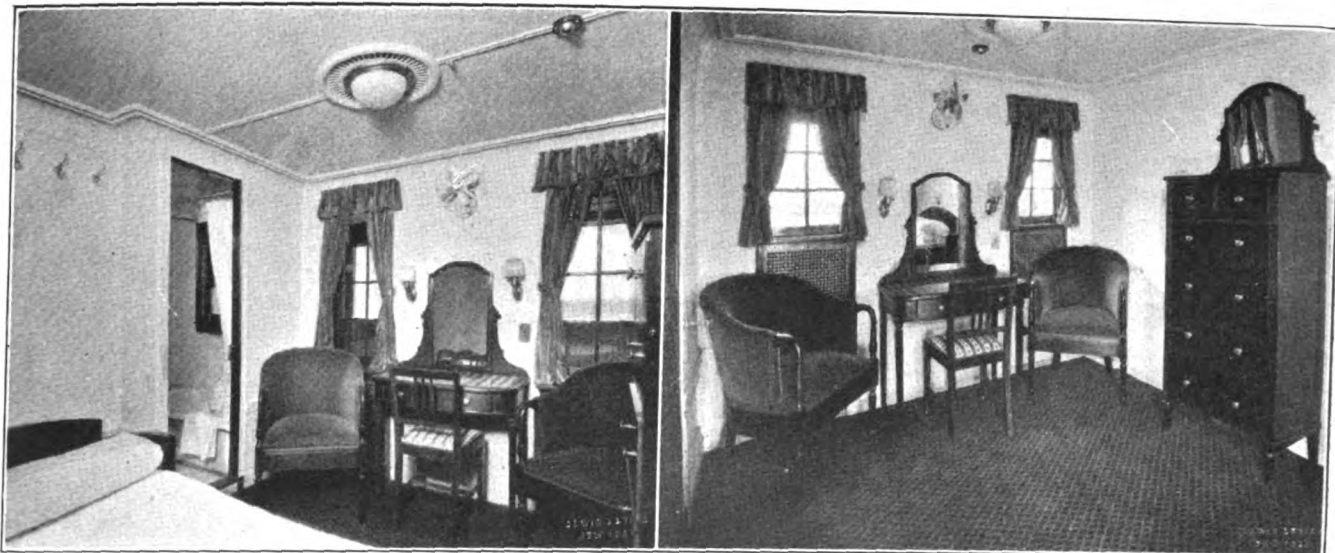
They are equipped with refrigerating machines and a brine system for taking care of the chilled freight space and stewards' cold storage boxes. On the main deck amidships there are engineers' firemen's and steward's crew's quarters, mess rooms, serving pantry, engineers' storerooms, engineers' workshop, porters' shop, main galley, storerooms, toilets and washrooms, and steward's cold storage rooms. Aft of midships there is baggage room, mail room, specie room, waiters' quarters and washrooms. Forward on main deck are sailors' quarters and washroom, and forward on upper deck are crew's quarters, consisting of carpenter, boatswain, watchman and others.

The fore and aft peak tanks are used for fuel oil and for salt water trimming tanks. Double bottom tanks are used for fuel oil water ballast and boiler feed, except No. 7 deep double bottom tank. Culinary water or ships tanks are built in port and starboard in way of shaft tunnels between double bottom and lower deck, and No. 7 deep double bottom tank will be used for culinary water. There are two shaft tunnels for twin screws with one common tunnel recess and thrust recesses forming after end of engine room.

The superstructure, including a part of the upper hull 'tween decks, contains staterooms, suites and special taterooms for first class passengers, main dining saloon and pantry, vestibules, entrance and saloon



Completely Equipped Barber Shop on the S. S. Yarmouth



One of the De Luxe Rooms with Private Bath on the S. S. Yarmouth

lobbies, stair halls, lounge and music room, library and writing room, deck saloon, smoking room, deck veranda, barber shop, coat room, newsstand, purser's office and room, chief steward's office and room, private and public toilets and baths, linen rooms, etc.

Arrangement of Passenger Spaces

On boat deck forward of the deck saloon, are first class staterooms port and starboard and aft of the deck saloon is the smoking room, deck veranda, and a dancing and sun deck. The forward house on boat deck is arranged for accommodation of the captain and deck officers with wheel and chart house and bridge above, also wireless house above. Forward of bridge on boat deck is an observation deck. Awnings are fitted aft over promenade deck.

The first class passengers are berthed in staterooms, and de luxe suites on the upper, promenade and boat decks, with some first class

passenger staterooms on the lower deck aft. Second class passengers are accommodated in quarters on the main deck aft. Private baths, toilets and showers are provided in connection with many of the rooms and each stateroom has the most modern plumbing with hot and cold running water at the lavatories.

With the exception of the main entrance lobby and the dining saloon which are located on the upper deck, all the public spaces such as the lounge and music room, writing room, library, smoking room and deck veranda are located above on the promenade and boat decks. The deck officers are housed forward on the boat deck and the engineers on the main deck amidships. The promenade deck has a complete circuitous promenade protected across the forward end and half way down each side by storm enclosure fitted with Laycock storm windows. On the boat deck aft of the deck veranda is pro-

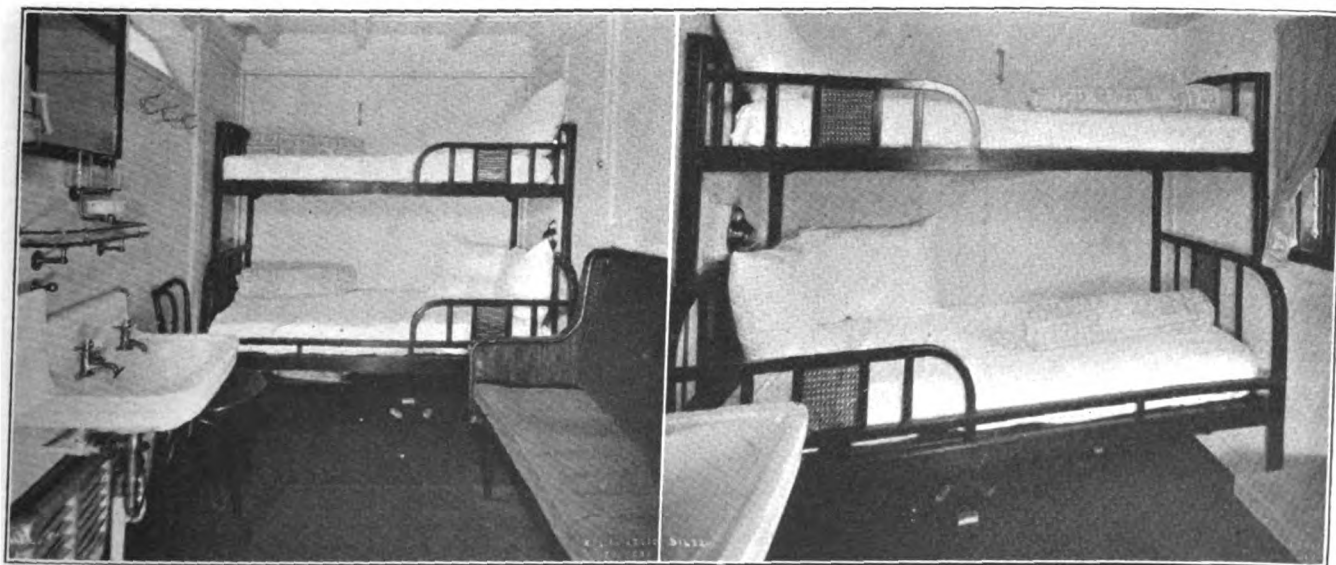
vided a spacious sun deck for deck games, and dancing.

In the arrangement, appointment and decoration of the passenger accommodations, the uppermost thought has been to provide every possible comfort and convenience for the traveller.

Scheme of Interior Decoration

The main entrance lobby is not only the space where one enters the ship, it is the "community center". The check room, news stand, barber shop and pursers office open into it. It is here also that the bulletins are posted giving information regarding the various activities aboard ship. The walls are panelled in mahogany and the big spacious clubby chairs and settees upholstered in brown Spanish leather make this room almost as popular with the men, as the smoking room above.

The dining saloon is located forward on the upper deck and is paneled in mahogany and old ivory with



At Left—An Ordinary Inside Room. At Right—Another Type of Ordinary Stateroom 3-4 Lower. Single Upper Berth

tones of rose and gold. The floor is laid in rubber tile of cool grey and green marbled effect. The air-ports are concealed behind sliding sash of leaded art glass with medallions depicting the various types of picturesque Yarmouth fishing boats. The damask draperies and upholstery are in tones of crimson and gold.

There are two stairways, one forward and one aft from the main entrance lobby. These two stairways give access to all decks and are finished in mahogany with wrought iron balustrades of simple effective design. At each deck where these stairways land, the lobbies are finished in mahogany and are spacious enough to provide in most cases, cosy alcoves to either side with comfortable lounging chairs and tables for the passengers.

Public Rooms Are Attractive

The lounge and music room and the library and writing room are located forward on the promenade deck and are paneled in white mahogany. These spaces, which are all adjoining are luxuriously carpeted and quietly decorated in blue and mauve and here, in the late afternoon, the subdued tones of the ship's orchestra lures the passenger, from the sunny promenade, for a game of bridge or tea.

On the boat deck is the sun parlor, done in mahogany with floor of black and grey marbled tile and hangings of cool green. Aft of this space is the smoking room. This room is suggestive of an early Jacobean great hall, paneled in English oak. The

central area of the room is a deck and a half high, the upper part of which is in half timber and stucco. An open fireplace is located at one end of the room. Above the fireplace is a fine plaque of beaten copper, flanked by carved grotesques. One either side of the centre hall are smaller alcoves with tables and built-in settees and large comfortable sofas and arm chairs. The floor is of red and black tiles, the entire effect being one of warm and cordial welcome.

The deck veranda and tea room is located just aft of the smoking room and is decorated along the line of the "art nouveau" style. The low wainscot and trim is of very light select birch with panels above of grey with vermillion trellis effects. The reed furniture is in black and jade green with cushions of bright vari-colored plaids. The full height casement windows are draped with printed linen in harmonizing tones. During the day, light refreshments may be had here at any time, served direct from a deck pantry adjoining; and at night the Chinese rugs are removed and the maple floor, with waxed surface provides an excellent dancing area, which can be extended to the spacious sun deck just outside, on pleasant moonlight nights.

All the staterooms are arranged to open on inside passageways leading directly from the various stair lobbies and while there are public baths provided, many of the rooms have adjoining showers and toilets. In addition to these there are 10 de-luxe

suites, each with its private bath room. These de luxe suites are luxuriously appointed, comparing favorably with any of the recently built modern hotel rooms, with dressing tables, easy lounge chairs, chiffoniers and closets.

Throughout the passengers spaces, nothing has been omitted that would tend to make the life at sea less comfortable or complete for the traveller than if he were ashore.

Main Propelling Machinery

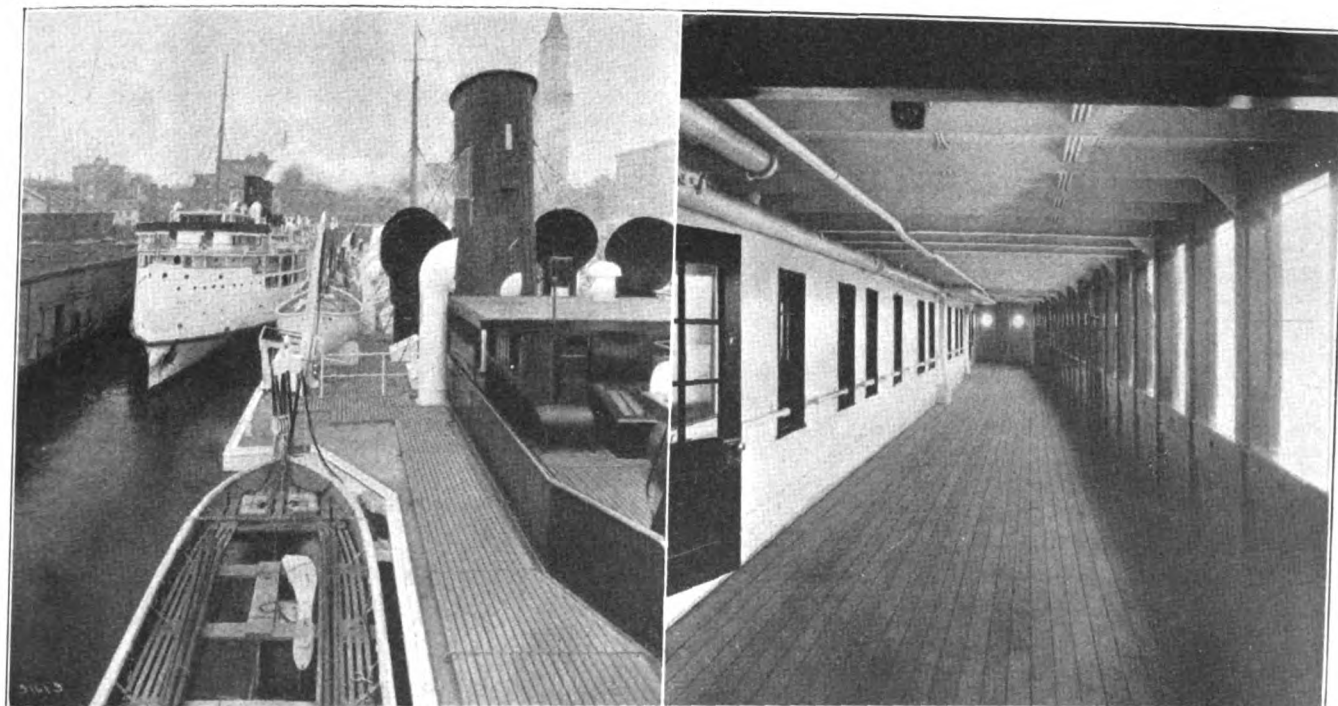
The propelling machinery consists of two complete sets of Parsons type cross compound single reduction geared steam turbines designed to develop 7600 shaft horsepower with 157 revolutions per minute of the propellers and revolutions of the turbines at about 1800 per minute. The ahead turbines are capable of not less than 10 per cent excess power over the designed power at an increased number of revolutions. The total shaft horsepower for astern is 55 per cent of the total ahead power at about two-thirds of the ahead revolution.

In order to maintain the correct axial adjustment of the rotor Kingsbury adjusting blocks have been fitted at the forward end of the high pressure and the low pressure turbines. The main thrusts are also of the Kingsbury type fitted on the forward end of the main gear shafts.

Each set of the Parsons turbines as built by the Cramp company consists of one high pressure ahead and one low pressure ahead in series,



Special Room with Pullman Folding Upper Berth, Toilet and Shower. At Right—Shower of Special Room



At Left—Top Deck on the S. S. Yarmouth Showing Life Boat Arrangement. At Right—Shelter Deck

each turbine driving a separate pinion in mesh with a common gear wheel through the single reduction gearing. The high pressure and low pressure turbines consist entirely of reaction blading. An astern turbine is incorporated in the casing of each low pressure ahead turbine and consists of two impulse wheels.

The two sets of reduction gearing and their casings were built complete by the DeLaval Steam Turbine Co., Trenton, N. J. The diameter of the gear wheels is about 100 inches and the length of the gear faces is about 34 inches.

There are six return tube cylindrical, four furnace, scotch boilers built by the Cramp company arranged in two fire rooms, in three batteries—two boilers in each battery. The fire rooms are separated by a watertight bulkhead at the forward end of the

middle battery of boilers, extending up to the upper deck. The boilers are connected by smoke boxes and uptakes to one smoke stack, which it is interesting to note is about 88 feet above the base line of the vessel. The boilers have been built for 210 pounds working pressure and burn oil with heated forced draft. Each boiler is about 16 feet 4 inches inside diameter and about 11 feet 8 inches long over top heads. The total effective heating surface measured for oil burning is about 21,000 square feet, and if at any time they are changed to coal burning the total grate surface will be about 465 square feet with grate bars 5 feet 6 inches long. Each boiler is fitted with four 42-inch inside diameter furnaces.

Propellers of Solid Bronze

The propellers are of solid man-

ganese bronze, right and left hand, both turning outward. All the pumps in the engine and fire rooms, and elsewhere about the ships, have been made by the Worthington Pump and Machinery Corp.

It is interesting to note that there are not any cargo winches at all on these ships. Instead electric freight elevators have been installed in the hatches and the different 'tween decks and holds are worked through the cargo ports. The elevator equipment was produced by M. L. Bayard of Philadelphia.

The storm windows enclosing the forward end of the promenade deck were made by the Kearfott Engineering Co. New York. Most of the floor covering used in these ships was supplied and laid by the Selby, Battersby Co. Philadelphia.

Do Big Rebuilding Job on S. S. Havana

BY H. M. WICK

TWENTY years ago the New York and Cuba Mail Steamship Co. built a pair of fine big passenger and freight ships for its West Indies and Mexican services and named them HAVANA and SARATOGA. William Cramp and Sons Ship and Engine Building Co., Philadelphia, who are now in the process of liquidation was the builder.

After ten years of faithful service on this run without a serious break-

down, the United States entering the World War and being in need of transports commandeered the HAVANA. The navy converted this vessel into a hospital ship and in this capacity the HAVANA did her bit for her country. After the conclusion of hostilities she put into San Francisco harbor and the navy then intended to reboiler the ship for further service. Babcock and Wilcox watertube boilers that had been built for a battleship but never

used were secured and landed on the foundations in the ship when the work was suddenly abandoned. Considerable work had been done on the main engines in the way of overhauling and renewal of parts, also scaling and painting of the interior of the ship's hull and tanks.

The navy not having any further emergency use for the HAVANA as a hospital ship or for any other purpose laid her up in San Francisco

and several years ago sold the vessel. Early this year being in need of additional passenger ship tonnage for its West Indies services, the Atlantic Gulf and West Indies Steamship lines bought the HAVANA as she was laid up in San Francisco harbor with the intention of again using her in the Ward line service and possibly in the Mallory line route to Texas and to Porto Rico on the Porto Rico line, all of which are subsidiaries of the Atlantic, Gulf and West Indies.

In Dilapidated Condition

The HAVANA being in a dilapidated condition her new owner decided to recondition and rebuild the vessel throughout her passenger quarters and to overhaul the propelling machinery. Accordingly a contract was placed with the Todd Dry Docks, Inc., Seattle, Wash., amounting to over \$800,000. And in July she was towed to Seattle. It is expected the work will be completed in December of this year.

Theodore E. Ferris, New York naval architect and marine engineer, was called in to design a new layout of passenger quarters and to supervise the reconstruction work.

The HAVANA and her sister ship SARATOGA are 429 feet 10 inches long overall, 50 feet in beam, 24 feet designed load draft and have a deadweight carrying capacity of 5092 tons. They make a sea speed of 17 knots and the propelling machinery develops 10,000 indicated horsepower.

A total of 200 first class passengers will be carried in regular and special suite rooms and in ordinary staterooms, and about 75 second class passengers in regular inside and outside staterooms. A crew of 135 will be needed.

New Public Rooms and Quarters

The ship is of the four deck hurricane deck type, with partial double bottom, orlop, lower and main complete steel decks, and hurricane deck of partial steel construction. There are eight transverse watertight bulkheads forming holds, 'tween deck compartments and peak tanks, the bulkheads extending to main deck. The two ships were originally built to American Bureau of Shipping class and the HAVANA will be rebuilt to meet the requirements of the American Bureau.

The work of ripping out the construction on the various decks has already been completed at the Todd yard and the new work is going in. In the way of public spaces there will be provided a new dining saloon seating about 122 persons at a time.

It will be finished in mahogany panel work and some paint. There will be a new lounge and music room located forward on the promenade deck finished in white mahogany and having a large light and air well fitted over the center; also there will be a writing room and a library, and a smoking room located aft on promenade deck finished in white oak panels. Aft of the smoking room will be an attractively finished deck veranda and tea room painted in bright colors. For the second class quarters there will be provided a social hall, smoking room and dining room.

At the forward end on each side of the promenade deck and across the forward end will be fitted an enclosed promenade guarded with heavy plate glass windows of the Kearfott frameless type. Partition bulkheads for passageways, public spaces and staterooms, and also for ceilings, will be formed with Vehisote boarding fitted on tongue and groove backing.

Fire Protection System Completed

For fire protection the present smothering pipes and water sprinkling system will be rearranged and renewed in part for the cargo holds, and other spaces. A Rich smoke detecting system will also be fitted for the ho'ds. For the passenger quarters the Cory supervised automatic fire detecting system will be provided throughout staterooms, public spaces and crew rooms. The present fire main water pipes will be overhauled and renewed in part. The Foamite-Childs fire extinguishing system will be installed for fire room and engine room protection.

New electric generating sets of Westinghouse make are being fitted. Electrically driven winches of Lidgerwood make with Westinghouse motors are being provided for the 'tween decks and steam winches for the weather deck hatches. A new wireless transmitting and receiving set of 2 kilowatts capacity made by the Independent Wireless Telegraph Co. will be used. An entirely new refrigerating system for cargo and stewards cold storage is being installed as made by the Brunswick-Kroeschell Co. A mechanical ventilation system is being installed for the first and second class passenger rooms and certain of the public spaces, and crew quarters.

The vessel has twin screws and there are two vertical inverted direct acting three cylinder triple expansion engines developing about 10,000 indicated horsepower. New liners will be fitted in the high pressure, the intermediate pressure and low pressure cylinders. The new liners are bored for a smaller diameter in the case of the high pressure and intermediate pressure cylinders, as the boiler working pressure is to be increased from the original 180 pounds to 205 pounds with the new watertube boilers replacing the scotch boilers. These eight new watertube boilers will burn oil as fuel under forced draft and will be arranged in two fire rooms. Each boiler contains 2642 square feet of heating surface, giving a total heating surface for the eight boilers of 21,136 square feet. Each boiler will be fitted with Diamond soot blowers.

United States Lines' Profit

THE United States lines showed a direct profit from operations of \$635,842.97 during the fiscal year ended June 30, according to a statement submitted to the Merchant Fleet Corp. on July 21. After deducting the proportion of Fleet corporation overhead expenses assigned to the lines, the net profit was \$371,085. This is compared with a net loss of \$645,000 during the preceding fiscal year, or a net gain of \$1,016,085 in the operating results.

During the fiscal year, 61 voyages were terminated, 83,756 passengers were carried, and 274,894 tons of cargo transported. The ships which were operated on the United States lines during the year were the LEVIATHAN, GEORGE WASHINGTON, REPUBLIC, PRESIDENT HARDING and PRESIDENT ROOSEVELT. During the preceding fiscal year the S. S. AMERICA was in opera-

tion and proved a big revenue producer. It is expected that this ship will be in commission again in the spring of 1928.

The financial statement for the fiscal year just closed is as follows:

Terminated voyages	61
Passengers carried	83,756
Cargo tonnage lifted	274,894
Voyage revenue	\$16,675,390.81
Voyage expenses	\$14,157,350.71
Adjustment	57,642.68
Insurance	401,795.68
Maintenance and betterment repairs	1,097,291.06
Advertising	825,467.71
Total direct operating expenses	\$16,039,547.84
Direct operating profit—excluding Fleet corporation administrative expense	635,842.97
Fleet corporation administrative expense chargeable to United States Lines	264,757.33
Net profit	\$ 371,085.64
The profit indicated above has been determined after including in the total shown for repairs, charges for betterments amounting to \$207,415.12.	

Stress Need of Merchant Marine

At Annual Northwest Merchants Exposition Seattle—Many Exhibits in Marine Section—Observe Marine Day with Program of Education

By Robert C. Hill



Pier 41—Seattle—Terminus of Admiral Oriental and American Mail Steamers—S. S. President Grant at Right

SEATTLE, the Pacific's port of progress, is the slogan officially adopted by the Maritime association of Seattle at the first annual Marine day celebration. Hereafter, Marine day is expected to be a yearly event for the purpose of stressing the importance of ships and shipping not only to the seaports of the Pacific but to the great hinterland whose products in large measure move by water to market.

Seattle's Marine day was sponsored by the Maritime association of Seattle, organized by shipping men for the purpose of arousing interest in the merchant marine and in deep sea shipping. After much consideration it was decided to combine the marine exposition with the Pacific Northwest Merchants exposition, an annual event of merchandise display to which are invited the merchants of this state, Oregon, Idaho and Montana. The exposition was held during the week of Aug. 8 to 13. With the presence here of the Pacific fleet and navy auxiliary vessels, and the national realtors' convention, attendance at the exposition exceeded all previous records.

Friday, Aug. 12, was designated as Marine day and a program em-

phasizing the extent of shipping out of Pacific Northwest ports was successfully given. Marine and aquatic events as well as the weekly chamber of commerce luncheon, at which speakers hammered home the economic need of adequate water facilities, served to impress upon the public at large the foremost role which shipping is playing in the commerce of the nation.

Cooperation With People of Interior

Combining Marine day celebration with the Merchants exposition was a happy thought because it opened the eyes of many people from the interior to the importance of deep sea shipping and the effect it has upon their own success and profit. It also served to clear away the jealousy and misunderstandings which invariably exist between residents of the back country and those who have access to deep water facilities.

The exhibits of merchandise and the marine displays were held in an appropriate setting. The entire second floor of pier 41, one of the port of Seattle's largest terminals, was given over to the exposition. This pier is the terminus of the Admiral-Oriental and American Mail line steamers operating freight and pas-

senger services to all sections of the Orient. The express liner PRESIDENT GRANT was alongside while in an adjacent berth lay the U. S. S. TENNESSEE. Thus both a modern unit of the merchant marine and an up-to-date fighting machine were open to inspection and proved of keen interest to those from inland towns.

Pier 41 is a modern wooden terminal provided with both open and covered storage space. It is the longest deep water terminal in the world, measuring in excess of 2500 feet from shore to pier head. The terminal has a total area of 927,100 square feet, has car trackage for 396 cars and provides berthing space of 5380 feet. Depth of water at low tide at all its berths is 35 feet.

The marine exhibit occupied one entire aisle of the show and included more than sixty booths, occupied by steamship lines, supply houses, towing companies, brokers, marine publications, stevedores, repair yards, salmon packers and allied industries.

Painting of ships and cleverly executed ship models were much in evidence taking the visitor back to the days of the clipper ship era and comparing the carriers of that day with the modern motorships of the present.

The marine paintings were especially meritorious and included works of celebrated marine artists.

Wide Variety of Exhibits

One of the features was a replica of the Seattle water front, the work of W. C. Johnson, naval cadet University of Washington, and C. O.

Anderson, high school student. On a glass plate, representing the water of the harbor, they faithfully reproduced the piers and terminals of the water front together with models of local and deep sea vessels arriving and departing. These models were made of cardboard and colored to match the originals. The whole scene

was startlingly true to actual conditions.

While manufacturers' agents were well represented, the feature of the exhibit was the number of local plants which specialize in shipping and ship equipment. From the plant of Todd Dry Docks, Inc., where the most difficult marine repair jobs are

Marine Exhibitors at Merchants Exposition, Seattle, Aug. 8-13

CAMP LEWIS TENT & AWNING CO.—Camp and ship equipment.

SEATTLE DAILY JOURNAL OF COMMERCE—Daily marine and commercial publication.

MATSON NAVIGATION CO.—Hawaiian and South Pacific Islands exhibit of products, also steamship service information.

CHAS. H. HARDEN & CO.—Engine room and general ship supplies.

STANDARD OIL CO.—Offshore and coasting fuel service.

RAILWAY & MARINE NEWS—Monthly marine publication.

WIRE ROPE MFG. & EQUIPMENT CO.—Towing hawsers, steel cables, etc.

ALASKA STEAMSHIP CO.—Alaska views, fishing and marine exhibit.

PUGET SOUND NAVIGATION CO.—Marine view of Puget sound, fleet schedules including automobile ferries.

WASHINGTON FURNITURE MFG. CO.—Steamship furniture and equipment.

JAPANESE STEAMSHIP ASSOCIATION, including **NIPPON YUSEN KAISHA**, **MIT-SUI & CO.**, **OCEAN TRANSPORT CO.**, **KOKUSAI KISEN KAISHA**, **OSAKA SHOSEN KAICHA**, **YAMASHITA & CO.** AND **TAT-SUMMA STEAMSHIP CO.**—Large model of N. Y. K. passenger liner **HAKONE MARU** and Japanese scenes.

GENERAL PETROLEUM CORP.—View of fleet and information covering marine service.

WILLIAMS STEAMSHIP CO.—Intercoastal service exhibiting Sperry Gyro-compass.

JAMES GRIFFITHS & SONS—View of coasting fleet and samples of ore and gypsum freighted.

WASHINGTON IRON WORKS—Photographs and working model of Washington-Estep diesel engine, also view of installations in fishing craft, ferries and larger vessels.

MARINE DIGEST—Marine views—weekly shipping publication.

MAX KUNER CO.—Exhibit of nautical equipment and navigating instruments.

DORAN BRASS FOUNDRY CO.—Exhibit of valves and propeller blades including model made for American Mail line, 6490 pounds

weight, 16 feet 6 inches in diameter, tensile strength 72,000 pounds of manganese and bronze.

MARKEY MACHINERY CO.—Viking oil engines and drums.

GENERAL STEAMSHIP CORP.—Views and displays of exports of various countries to which regular service is maintained.

ISAACSON IRON WORKS—The largest forge plant in the West; display of stern frames, steamship shafts, anchors, chains and forgings.

AMERICAN-HAWAIIAN STEAMSHIP CO.—Displays of various kinds of merchandise carried in intercoastal trade.

PACIFIC MARINE SUPPLY CO.—Exhibit of various supplies for large and small water craft, fishing equipment, etc.

L. C. OMAN & CO.—Manufacturers' agents for Wilcox-Crittenden Co., National Marine Lamp Co., Massasoit Mfg. Co., Leach Co., Boston-Lockport Block Co.

SUNDE & d'EVERS—Display of canvas and general ship chandlery.

SEATTLE PAINT CO.—Marine views and paint samples, etc.

TODD DRY DOCKS INC.—Painted background to represent local plant, also large model of ship in dock.

PORTLAND CORDAGE CO.—Display of Manila ropes made in Seattle.

MILL & MINE SUPPLY CO.—Exhibit of various equipment used in steamship engine rooms.

JOHNSON MFG. CO.—Shafts, marine engines and Hill hydraulic ram.

SEATTLE TENT & AWNING CO.—Hatch covers, sails and other marine equipment.

NELSON STEAMSHIP CO.—Advertising company's coastwise and intercoastal services, including first direct passenger service from Puget sound to New York.

V. S. JENKINS & CO.—Coen mechanical oil burner, valves, engine packing, power specialties.

J. H. MITCHENER & CO.—Petter marine and stationary oil engines.

KING SHIPBUILDING CO.—View of local plant.

ATLAS PACKING & RUBBER CO.—Packing and rubber supplies.

J. D. MULLANE—Marine paints and varnishes.

FAIRBANKS, MORSE & CO.—Models of diesel engines, marine installations and springs.

COOLIDGE PROPELLER CO.—Models of brass propellers, stern bearings and stuffing boxes.

CARY, DAVIS TUG & BARGE CO., **DRUMMOND LIGHTERAGE CO.**, **WASHINGTON TUG & BARGE CO.**, **FOSS LAUNCH CO.**—Marine views of towing equipment, photographs of various types of towing, exhibit of towing hawser, etc.

McCORMICK STEAMSHIP CO.—Models of ships and illustrations depicting various coasting and offshore services.

ALASKA COPPER WORKS—Copper, brass and bronze rods, tubes, ferrules, pipes, etc.

ASSOCIATED SALMON PACKERS—Scenes illustrating catching and canning of salmon in Alaskan waters.

ALLAN CUNNINGHAM CO.—Exhibit of steering gears, winches, windlasses, capstans, warping machines, air whistles, telemotors and other marine equipment manufactured at local plant.

CUSTOMS HOUSE BROKERS OF SEATTLE—Donated to foreign trade department of Seattle chamber of commerce to illustrate growth of Seattle foreign commerce.

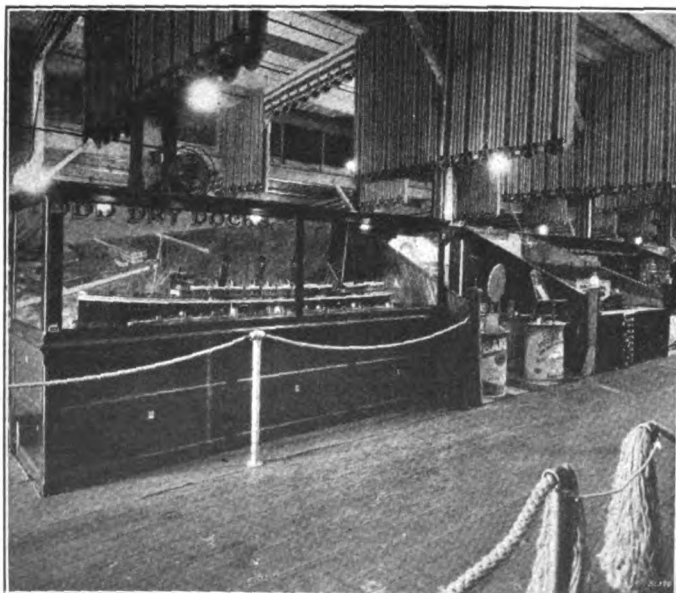
SOUND FERRY LINES—Showing routes by automobiles to Olympic Peninsula, growth of auto traffic by water, etc.; scenes on routes.

SEATTLE CHAIN & MFG. CO.—Exhibit of locally made chains, shackles, pulleys, etc.

PUGET SOUND PILOTS ASSOCIATION—Ship models, paintings and data covering work done by eighteen local pilots.

MERCHANTS TRANSPORTATION CO.—Views and data covering freighting in Puget Sound waters.

POWER PLANT ENGINEERING CO. AND FRIGIDAIRE CORP.—Exhibit of equipment applicable to marine installation.



A PORTION OF THE MARINE SECTION EXHIBITS AT THE NORTHWEST MERCHANTS EXPOSITION HELD IN SEATTLE AUG. 8-13. AT LEFT—TODD DRY DOCKS INC., AT RIGHT—McCORMICK STEAMSHIP CO.; CARY DAVIS TUG & BARGE CO.; DRUMMOND LIGHTERAGE CO., ETC.

done, to the smallest exhibitor the displays were of unusual interest and variety. Exhibits were held of the products of plants manufacturing diesel engines of any size, steam engines for marine service, chains, anchors, stern bearings, whistles, ship furniture, marine paint, propellers, manila and wire rope, sails, canvas, hatch covers, nets, canning machinery, engine and deck supplies. In fact the exhibits proved that practically everything required by ships and shipping is produced in Seattle and vicinity. This phase of the exhibit was one of the outstanding surprises.

Makes Nation Ship Minded

Members of the Maritime association of Seattle, having in mind the building of the American merchant marine, are more than pleased with the success of their first venture. The idea of an annual observance is to make the nation more ship minded and especially to teach to citizens of inland states the importance of an adequate merchant fleet not only to serve the nation's economic welfare in times of peace but to act as an auxiliary to the navy in times of national emergency.



DIESEL ENGINES, PROPELLERS, NAVIGATING INSTRUMENTS—MARINE SECTION OF EXPOSITION IN SEATTLE

The sympathy with which merchant marine propaganda has been received leads members of the Seattle Maritime association to hope that other ports will follow the idea until Marine day becomes an annual national event to

call attention to the need of ships and shipping for the nation's prosperity and safety.

The firms and individuals listed on the opposite page, were exhibitors in the marine section of the exposition.

Ohio River System Traffic Increases

A STUDY of transportation methods and facilities on the Ohio river system has been completed and a report was issued Aug. 4. The work has been carried out by the board of engineers for rivers and harbors of the war department in co-operation with the bureau of operations of the United States shipping board.

The Ohio river and its tributaries are now being improved for navigation by numerous projects which have been authorized by congress. The study reveals rapid advances made during recent years in the volume of tonnage carried on the Ohio river proper and on the entire Ohio river system. For the latter, the record figure of 48,000,000 tons of cargoes was given for the year 1925. This was about 6,000,000 tons greater than the movement during 1920, the previous record year, when the total stood at 42,000,000. On the Ohio river proper some 16,000,000 tons of cargoes were transported during 1925 as compared with 13,000,000 tons in 1905, the previous record.

Coal is by far the most important commodity transported over this river system. Oil and steel products are of growing importance but, according to the report, will scarcely show

marked increases until after the completion of the Ohio river project, for much of this traffic will move between Ohio and Mississippi river points over sections not now navigable throughout the year. Pending completion of the improvement, the report declares, it would be premature for steel and oil companies to expend a large amount of capital in terminals and floating equipment which could only be used at short intervals during the year.

The report shows some striking comparisons of the carriage of goods by water over the Ohio river route and by railroad over routes comparable to this water route. In 1923 the commerce on the river was 23,560,000 tons, while the tonnage on the railway was 13,084,000 tons, or a little more than half. The average haul on the river was 42 miles, as against 32 miles on the railway, so that the river's ton-miles of traffic (the total tonnage multiplied by the actual miles carried) was 989,500,000 as against 420,000,000, in round numbers, for the railway.

The conclusion to the report states that the terminals now in existence are adequate for the larger share of the commerce on the river system.

"The large industrial, mining, and public utility companies, which are responsible for the major portion of the traffic," it says, "are continually endeavoring to reduce unit costs of handling. When desirable they can secure the necessary rail connections. As regards packet boats and other common carriers, it is believed that a very great increase will follow the completion of the canalization project. For this class of carrier regular schedules and dependable service are essential."

Malolo Soon Ready

Repairs on the MALOLO, damaged while in a collision on her trial trip are going ahead rapidly at the Morse Drydock and Repair Co., Brooklyn, N. Y. It is expected that she will be ready to enter the San Francisco-Honolulu service in October.

The repairs will cost approximately \$500,000 which amount will be met by the insurance companies. They had previously paid out about \$250,000 under builder's risk policies on account of the fire which occurred while the vessel was on the stocks, and the minor damages incident to her grounding shortly after launching.

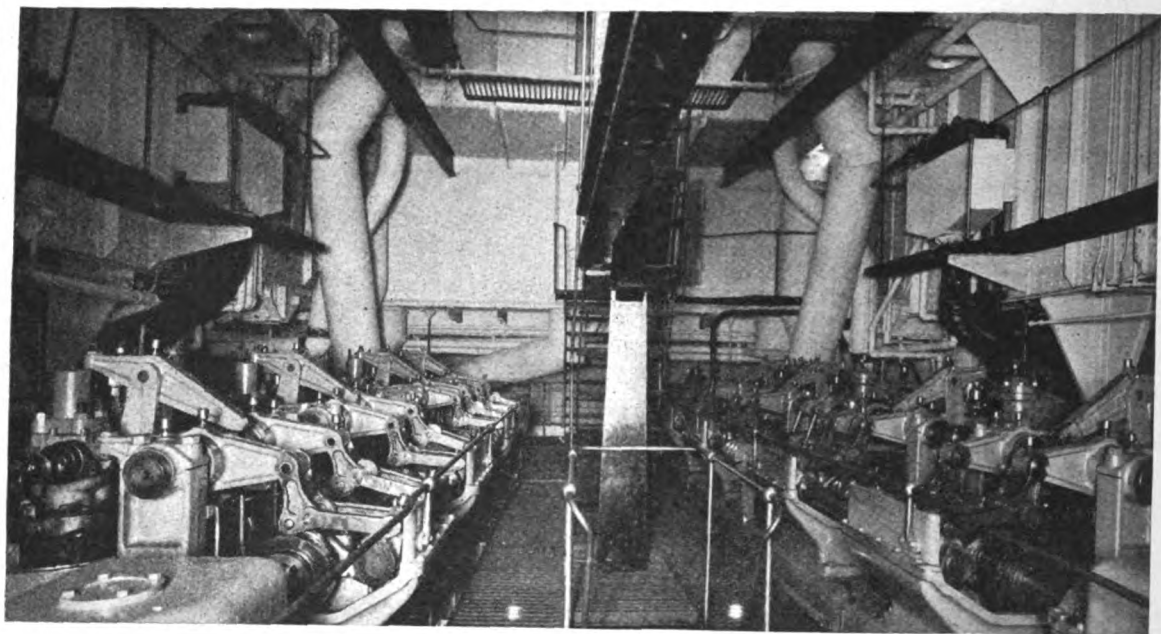


Fig. 1. Engine Room Tanker E. T. Bedford—General Lighting Units Under Deck Above at Left and Right

Correct Engine Room Lighting Will Save Operating Expense

By Roger A. Lea and Richard G. Slauer

AS IN every other field of industry and commerce, light occupies an important place in the motorship engine room. Good lighting helps to make an efficient, smooth working, cheerful crew while poor lighting breeds mistakes, and slower and discontented workers.

Conditions on shipboard vary radically from those on land, and therefore different problems are encountered when a lighting system is installed. Briefly enumerated, the factors of most importance are: 1. every ship must be its own power plant, 2. there is a minimum of space, especially headroom and 3. all fixtures and wiring must be watertight and specially protected.

Because each ship must have its own power plant, the problem of good lighting is made simpler. The average auxiliary engine, whether used for lighting alone, or for both lighting and auxiliary power, can handle the difference in power de-

mands between a poor lighting load and a good lighting load. The additional cost would therefore be only one or two cents per kilowatt-hour, (the cost of fuel, added depreciation, oil, etc.). Even if a slightly larger auxiliary is needed, the investment charges would raise the cost only a trifle. The ship owner thus has a big advantage over his brothers on

land, the manufacturer and store-keeper, who usually buy from a power company and pay at least six or seven cents per kilowatt hour.

And do the results justify this added expenditure for good lighting? Emphatically yes! First of all, good lighting means fewer accidents. A man who can see well is alert. Even if he is busy with something else, his mind will unconsciously warn him of impending danger. And an accident on shipboard is more dangerous than on land. The average ship has not the required facilities to take care of an injured man. Neither can anyone be obtained to do his work until a port is reached. If the injury can be shown to be due to inadequate or faulty equipment the owner would also be liable for compensation and the expense involved.

In the second place, good lighting means quicker and more accurate work. Every ship must have artificial lighting because of its construction and type of service. Natural light can never reach for any distance into a ship's engine room even in the case of freighter with

Proper Ship Lighting

Lighting of working spaces and crew's quarters on every ship should be given careful consideration by a properly qualified person. It is too often handled in a casual manner in the original design and the resulting inadequate and inefficient system continues as a serious handicap in the operation of the vessel. At little or no greater cost, with a well planned layout and the correct determination of the intensity of various units and the choice of the best type of fixtures and lamps, a truly efficient and satisfactory system may be evolved for any particular case.

This article was especially prepared for MARINE REVIEW by Roger A. Lea, of the Artistic Lighting Equipment association, 420 Lexington avenue, New York City, and Richard G. Slauer, of the Edison Lamp Works, Harrison, N. J.

a large skylight area. Also a ship is used both day and night. Look at men working over machinery and notice how good lighting helps them. Their movements are more sure, they do not misplace tools.

Good lighting also promotes cleanliness and sanitation. No one associates dirt with bright white walls and ceilings. Dark corners are sure to be collectors of odds and ends in some instances adding to the danger of fire due to spontaneous combustion. All of these reasons—less accidents, better work and cleanliness—help to keep up the morale of the crew. The United States navy conducted certain scientific researches along these lines with very satisfactory results. These investigations showed that, if a man is to do his best, he must be kept in a cheerful mood. He must have confidence in himself, the company for which he works. And good lighting helps to keep him cheerful.

Standards for Intensity

What represents good lighting? The shortest answer to this is an installation that gives sufficient light and is free from glare and harsh shadows. Industrial codes on land give values of light intensity for various types of operations. These same values may be used on shipboard although it is realized that units cannot be placed as symmetrically as in a factory and so the intensity will not be even at all places.

Some of these values in foot-candles are given below. The foot-candle is the unit of intensity of light, and represents the intensity on a surface one foot away from a standard candle.

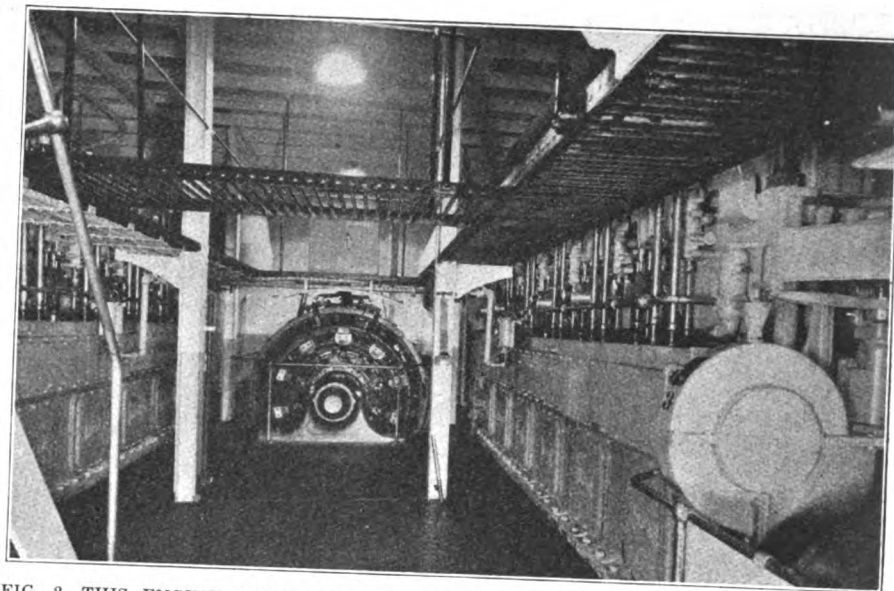


FIG. 2—THIS ENGINE ROOM OF A LARGE DIESEL ELECTRIC FERRY IS SO BUILT THAT GENERAL LIGHTING ONLY CAN BE USED

Machine shops:	
Rough bench work	4—8 f. c.
Fine bench work	8—18 f. c.
Assembling:	
Rough	3—6 f. c.
Medium	5—10 f. c.
Fine	8—16 f. c.
Garage:	
Repair work	6—12 f. c.

As a rough estimate, the total amount of general light needed can be supplied by a current consumption of not less than 0.1 watt per cubic foot of space in the engine room.

In the main engine room it is usually possible to use four or more high wattage symmetrically placed lamps to give a general illumination over the cylinder tops. On the average freighter the units may be placed on the underside of cross-beams or placed under some overhanging portions of the deck above. Fig. 1 shows the engine room of an oil tanker which uses four 200-watt lamps in

metal reflectors placed under the overhang of the main passageway. Two of these units may be seen in the upper right and left. On freighters and most passenger motorships the superstructure usually makes a ceiling over the engine room to which may be fastened lighting units. On smaller craft, such as ferryboats and tugboats, there is also usually a deck which covers a large part or the whole engine room and the smaller size of the engines in relation to the total volume of the room makes general lighting quite feasible. Notice in Fig. 2, the engine room of a ferryboat, how easily the smaller parts of the mechanism may be seen.

Glare Should be Avoided

Large size lamps (100 watts and up) should not be used when they are in the direct line of vision. This would make them too glaring. Look at the bright sun for a second or two and then try to read some print. It is impossible until the eyes readjust themselves. The same thing happens when looking at a bright artificial light source, although not quite so pronounced. However, the effect may be more permanently harmful since, when in a room, the eye is continually seeing the light source while outside one barely ever looks directly at the sun.

To prevent glare, 100-watt lamps should be mounted at least eight feet from the deck or grating level, and larger wattage lamps correspondingly higher. With large lamps, it is often wise to either use a diffusing globe around them or have the bowls of the lamps frosted. This will break up the direct glare from the filament.

When an incandescent lamp is placed above a certain area, a re-

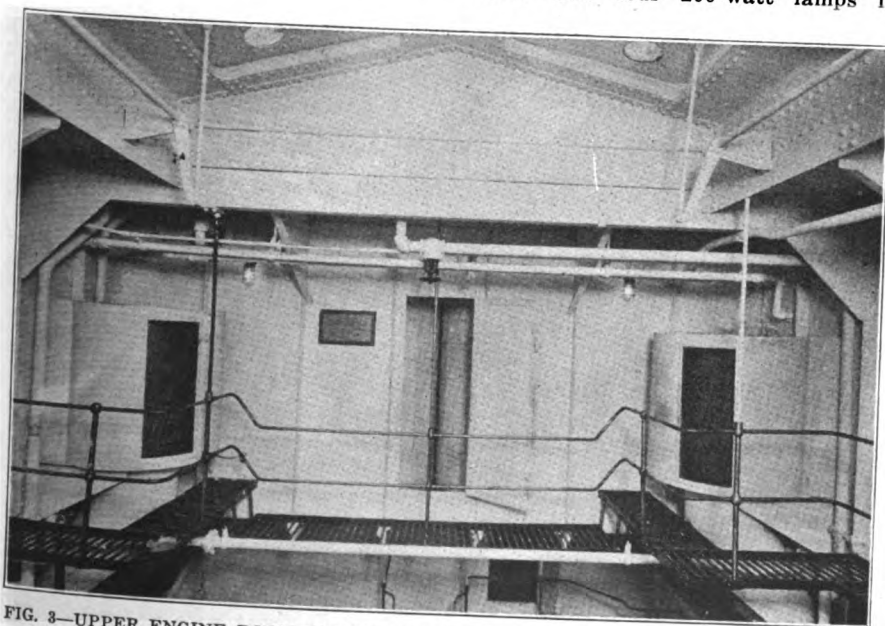


FIG. 3—UPPER ENGINE ROOM DIESEL TANKER E. T. BEDFORD. THE USE OF WHITE PAINT ADDS GREATLY TO PROPER UTILIZATION OF THE LIGHT

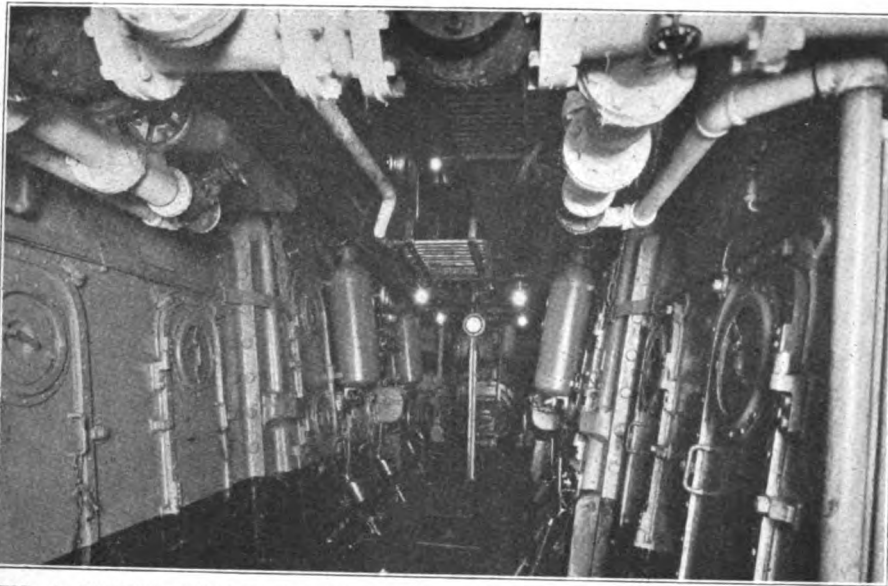


FIG. 4—ENGINE ROOM SPACE ON A TWIN SCREW DIESEL SHIP—WITH THIS ARRANGEMENT SMALL LIGHTING UNITS ARE QUITE PROPER

reflector should be used to concentrate the light down so it will be most efficiently utilized. Another reason for the reflector is that the lamp may be about the level of a higher grating. Without a reflector, it would be very glaring to men on that level.

Lower wattage lamps—generally 25

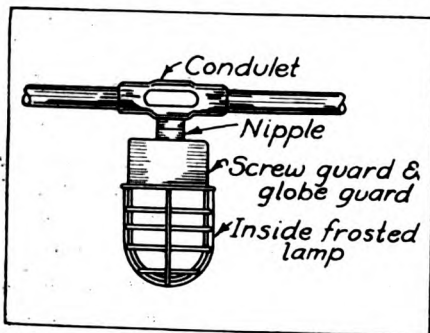


FIG. 5—A SMALL VAPOR PROOF UNIT MOUNTED ON CONDUIT OUTLET FIXTURE

or 40 watts—are used in passages, over entrances, throughout various grating levels, over ladders, etc. In other words, they are used where they have small areas to illuminate or where they are placed directly in the line of vision. Notice their use in the lower center of Fig. 1. Here they are placed on the underside of the grating to light the grating below. Fig. 3 shows their use along a grating which is on the level of the main deck, two levels above the cylinder tops in Fig. 1. By using small lamps, glare is practically eliminated, especially if the standard inside frosted lamps are used.

Another worth while use of low wattage lamps is to illuminate glass columns that carry fuel or lubricating oil. These are often at a grating level, and the stray light on the grat-

ing will help to prevent stumbling or slipping.

A great help to good lighting is the use of white walls. When light falls on a black area over 90 per cent is absorbed or wasted. When it falls on clean white only 20 per cent is absorbed. Fortunately on shipboard most engine rooms are constantly being painted and scrubbed giving them a big advantage, over the industrial plant on land, in getting the greatest benefit from the electrical energy consumed.

Clean White Walls Help

White walls also help to break up shadows. With them all the light does not come directly to the object. Some is reflected back and forth throughout the room and causes the object to be illuminated from all sides.

Many motorships have two engines, one on each side of the center line. The total height may be anything from a few feet to forty or more. On the large diesel engines, the controls are usually mounted on the sides or near the bottom, and on twin screw ships directly opposite and facing. The various indicating meters

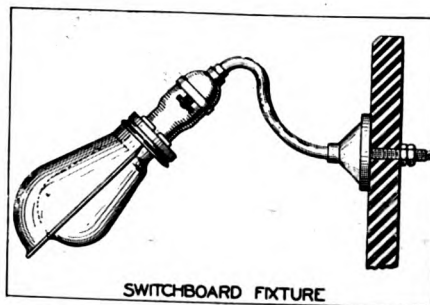


FIG. 6—A SWITCHBOARD FIXTURE PARTICULARLY SUITABLE FOR READING INSTRUMENTS

and gages that are near these controls must necessarily be well illuminated. Usually one or more lamps in ordinary reflectors may be placed over them. Sometimes, angle type reflectors can be profitably used, due care being taken so that the engineer is not forced to throw his own shadow on the controls.

The lighting of the electrical switchboard may be accomplished by either bracket lights extending outward from the tops of the panels or general lighting throughout the space surrounding. Look carefully at Fig. 1, where a lighting unit may be seen at the end of the right hand row of cylinders. This, and two others not shown, furnish a high level of general illumination in a space about ten by thirty feet which contains the switchboard.

There always comes a time when repairs must be made in some inaccessible place. For this, a small portable box may be made containing any number of outlets, each protected by a fuse. A heavy, flexible conductor can be used to tie in with



FIG. 7—A TYPE OF DOME REFLECTOR—OTHER TYPES USE A DEEPER REFLECTOR WHILE OTHERS USE ALMOST FLAT REFLECTORS

the main switchboard. Then the men at work will have handy outlets to connect their portable lamps, electric drills, soldering irons, etc.

Separate Power-Unit for Lights

Electrical lighting systems are not usually supplied from the main power units, even in diesel-electric boats. Moreover, the better installations have the lighting and auxiliary motors (for winches, steering engine, windlass, capstans, elevators, pumps, etc.) supplied from separate small diesel engine generating sets. A good plan is to have enough units (say three for a large ship) so that there is hardly any danger of a complete lack of current and so that repairs may be made at any time

by simply shutting off the unit in question.

Most lighting services on shipboard are either 115 volts or 230 volts. The 115-volt system is to be preferred. Incandescent lamps of this voltage are cheaper, resist shock and vibration better, and are more easily obtained as standard supplies. The problem of electrical insulation is also easier.

The Edison screw base is standard on American ships. Again the ease of obtaining the lamps and the cheaper price are important factors in making them so. Some English and Scandinavian ships, however, use the bayonet base. Its main feature is the fact that it cannot automatically unscrew from a socket. However, the ordinary screw base will not unscrew either except under the most severe vibration over a long period of time.

As mentioned earlier in the article,

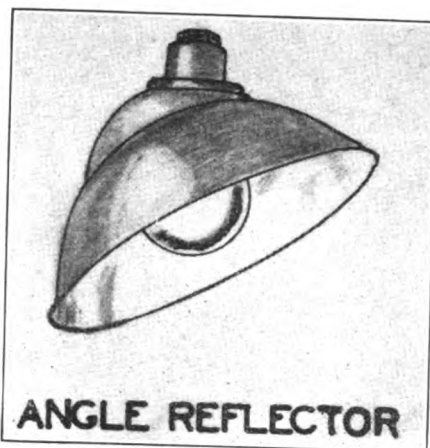


FIG. 8 A—ANGLE TYPE OF REFLECTOR FOR LIGHTING VERTICAL SURFACES

all fixtures and wiring material must be specially protected. The exact specifications are listed in various underwriters' codes and in a booklet published by the American Institute

of Electrical Engineers entitled "Recommended Practice for Electrical Installations on Shipboard." The latest edition of the latter booklet is dated May, 1927.

Protected Cables and Fixtures

In the engine rooms and similar spaces, all conductors should be leaded and armored, the lead protecting the conductor from the action of moisture and the outside armor (usually steel) from mechanical breakage.

The lighting fixture should be made of non-corrodible material and should be rendered watertight by means of a glass globe. The globe should be protected by a substantial guard. The watertight globe should be flanged or threaded to fit the outlet box.

Various examples of such units are pictured here. Most manufacturers supply the globes either clear or frosted. For large lamps mounted fairly low, it is advisable to use the frosted globe.

To Use Geared Turbines in New Boat

THE new twin screw passenger and freight vessel recently contracted for with the Union plant of the Bethlehem Shipbuilding Corp. by the Inter-Island Steam Navigation Co., will be propelled by geared turbines, with steam supplied by water tube boilers.

All of the machinery including the main propulsion geared turbines, condensing equipment, auxiliary turbine generators, electric galley equipment, fans, electric motors for blowers, etc. have been ordered complete from the Westinghouse Electric & Mfg. Co. The general particulars of the vessel are: Displacement, 4070 tons; dead-weight capacity, approximately 1800 tons, 11,600 cubic feet of refrigerator space; length overall, 310 feet 10 inches; length between perpendiculars, 295 feet; beam, 48 feet; depth molded to shelter deck, 27 feet 6 inches; sea

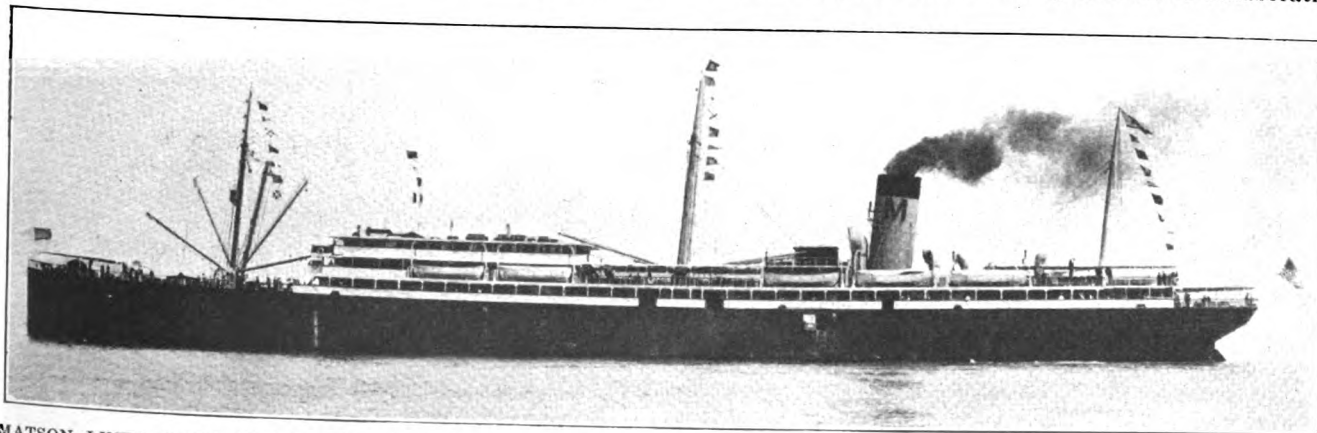
speed, 15 knots, with a maximum of 16 knots; and a total of 4000 shaft horsepower. There will be four water tube boilers, burning oil. The fuel capacity is to be 530 tons and the fresh water capacity 146 tons.

Accommodations will be provided for 218 first class and 96 steerage passengers and a crew of 67. There will be two continuous steel decks and the machinery will be located amidships, with watertight bulkheads surrounding the engine and boiler spaces. The hold will be divided into two compartments forward and a single compartment aft. The vessel will be built with a straight stem, cruiser stern, flat keel, and will be rigged with two steel pole masts, the mainmast to be fitted with two three-ton cargo booms and the foremost will be fitted with two five-ton and one 20-ton boom.

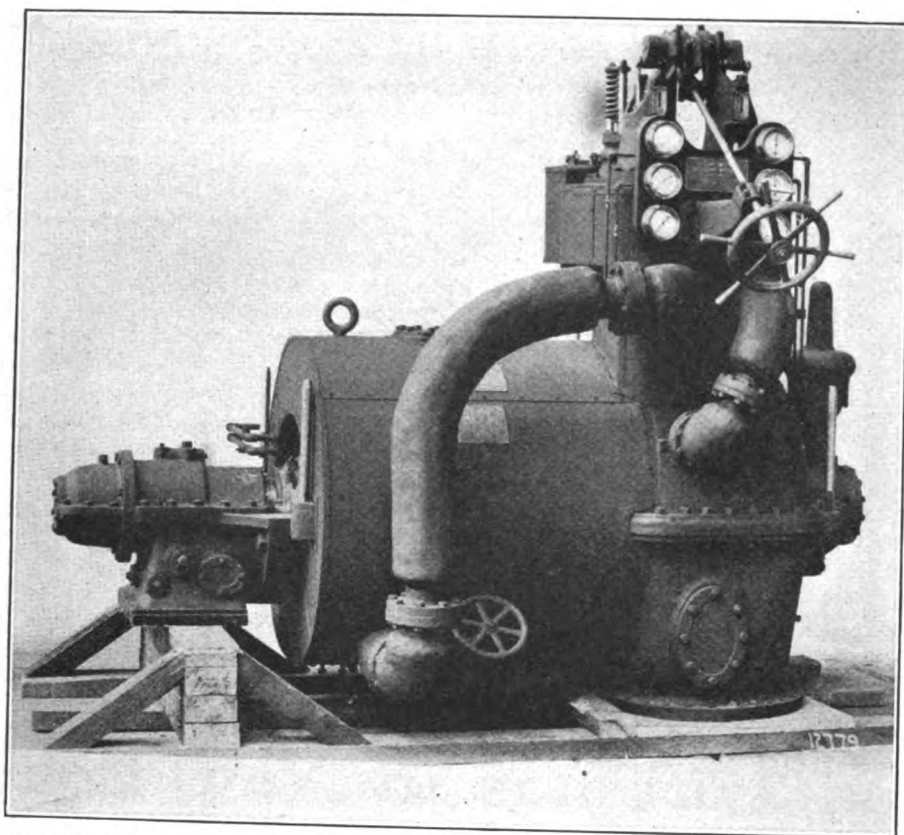
Two phases of this vessel contract

amounting to approximately \$1,400,000 are of particular interest. The first is the owner's confidence in geared turbine machinery and his progressiveness in taking advantage of the merits of this type of machinery in conjunction with electrical auxiliaries. The second is the fact that this is the first of the larger type vessels to be contracted for with a West coast shipyard in a number of years indicating that the Eastern shipyards may now expect more serious competition from West coast yards.

The new vessel is to operate between various ports in the Hawaiian Islands and reliability of the machinery was one of the matters given special consideration. Specifications were prepared by A. C. Dierickx, vice president and general manager of the Matson Navigation Co. in collaboration



MATSON LINER—MAUI, TWIN SCREW GEARED TURBINE PASSENGER AND FREIGHT STEAMER IN SERVICE BETWEEN SAN FRANCISCO AND HONOLULU



WESTINGHOUSE COMPLETE EXPANSION TYPE REVERSING MARINE TURBINE WITH MANEUVERING AND GOVERNOR VALVES

with the Inter-Island company officials.

The Matson company has had long experience with the geared turbine form of propulsion, as eight vessels of their fleet are powered with this type of machinery all of which was built by Westinghouse. Incidentally the complete condensing equipment of these eight ships is also of Westinghouse manufacture with turbine driven circulating, condensate pumps and air ejectors. The oldest of these vessels is the S. S. MAUI, of 10,000 shaft horsepower, and twin screws. The MAUI had a notable war record in the transport service and to date has logged approximately 750,000 miles. The total mileage logged by all eight of the geared turbine vessels, three of which are comparatively recent acquisitions, is over 2,000,000 miles. The S. S. MANULANI and MANUKAI have each logged approximately 300,000 miles with a splendid record for economy and reliability over their entire period of operation.

Turbine Drive Proves Successful

Three vessels of the Matson geared turbine fleet are ex-shipping board cargo vessels of the Submarine Boat Corp., 5350 deadweight type, the first of which was purchased from the shipping board by the Matson company about two years ago. The operation of this vessel which was named the MANA was so satisfactory that two additional vessels of this type were

purchased and placed in service, these being the PITTSBURGH BRIDGE and MILWAUKEE BRIDGE. These vessels are equipped with Westinghouse 1500 shaft horsepower complete expansion type turbines and condensing equipment and with two 2900 square feet Babcock & Wilcox water tube boilers with superheaters.

The main turbines of the new Inter-Island vessel will each be of the complete expansion type, the arrangement being similar to the turbines on the Submarine Boat type of ships, with the condenser underneath the turbine. The advances in turbine design in the past eight years will be incorporated

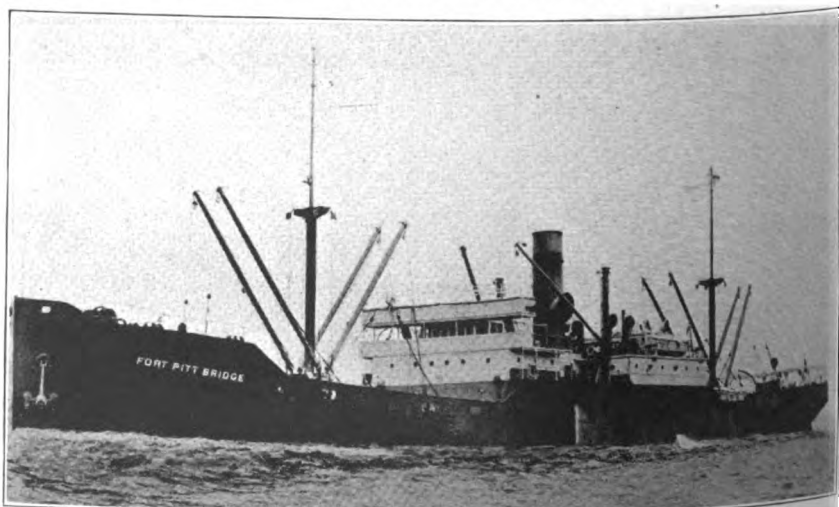
in the design and construction of the new turbines. The turbines for the Inter-Island vessel will be to the most modern design with reliability and best arrangement in the ship given paramount consideration. The turbines will be rated at 2000 shaft horsepower each, and will have a speed of 3600 revolutions per minute. Steam operating conditions will be 265 pounds gage throttle pressure, 75 degrees superheat and 28.6 inches of vacuum. The main turbines will be of the combined impulse and reaction type with the reversing element located in the main exhaust chamber and consisting of a two row impulse element.

The Westinghouse oil actuated impeller type emergency over-speed governor will be fitted. This type of governor is a comparatively recent development utilized now on practically all turbines for driving alternating or direct current generators and has been fitted in a number of ships where it has proven entirely successful.

Latest Design in Geared Turbines

The main reduction gears will be of the Westinghouse double reduction, single case, flexible frame type and will have a ratio of 3600 to 135 revolutions per minute. In order to accommodate the condenser underneath the turbine, the reduction gearing will have its pinions in a vertical plane. The propeller thrust bearings will be of the Kingsbury type mounted on the main gear shaft at the forward end of the gear case. A motor driven worm reduction turning gear will be fitted to the high speed pinion of each gear.

There will be two main condensers and one auxiliary condenser. The two main circulating pumps will be driven by auxiliary geared turbines and the condensate pumps by electric motors.



ONE OF THREE SUBMARINE BOAT CORP. TYPE OF GEARED TURBINE CARGO SHIPS OPERATED BY MATSON NAVIGATION CO. IN SAN FRANCISCO-HAWAIIAN SERVICE

Various of the other auxiliaries will be motor driven, including the blowers and fuel oil service pumps. It is to be noted that the galley will be electrified with electric ranges and a 3-deck sectional type bake oven. Ap-

proximately 100 fans will be fitted in the staterooms and other quarters.

The electric current for lighting, fans and auxiliary power requirements will be furnished by two Westinghouse 100-kilowatt auxiliary geared

turbine generator sets of special marine type, used on several ships.

J. Layfield, appointed supervising inspector, United States steamboat inspection service at Pittsburgh.

Builds Perfect Model of Ancient Man of War

THIS model represents the British 40-gun frigate ST. GEORGE of the year 1700. It was completed late in 1926 by Sidney B. Morfee, third officer of the White Star liner ARABIC, after two years of exceptionally patient and painstaking effort, during his hours off duty. The shape of hull and every detail conforms with utmost fidelity to the original and the workmanship is of the highest quality.

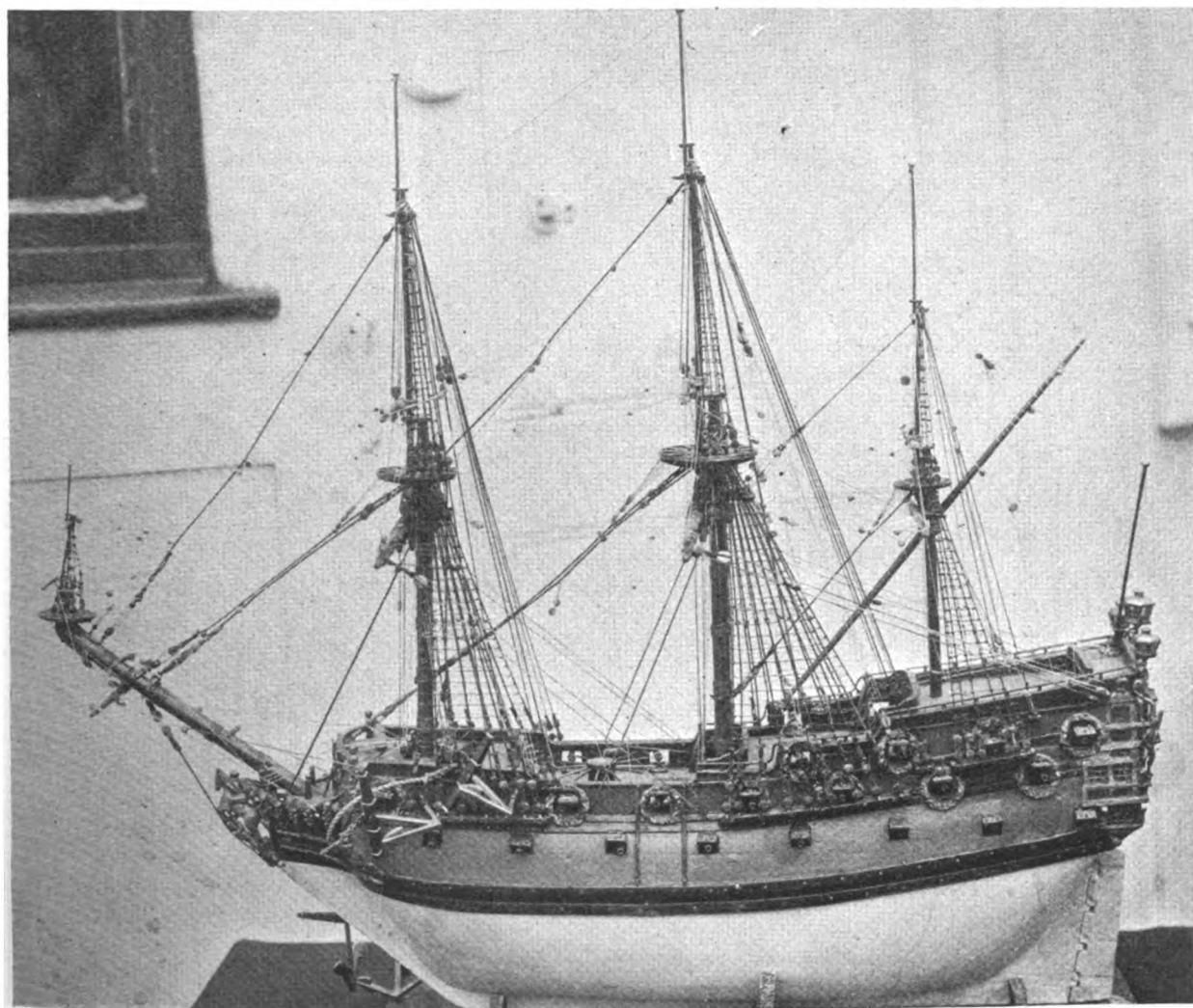
The length of the model is 2 feet 6 inches. Every feature of the original ship is presented, as nearly to scale as is possible on such a small reproduction. The original was one of the most elaborately decorated vessels of her time in the British navy, with much carving and gilding about

her stern, and with gilded wreaths about her upper tier of gun ports. The designs in the carvings were symbolical of the union of England and Scotland, with roses and thistles intertwined, and lions and unicorns fraternizing amidst cherubs and other symbols of love and felicity.

All this ornamentation has been reproduced by Mr. Morfee, in carving of minute perfection. Guns and gun carriages, rails, stern lanterns, fiddle head, anchors, capstan and fighting tops are perfect in detail. Gilding has been put on wherever shown in the original, and the ship's rigging and blocks are reproduced with an accuracy of which only a sailor is capable.

In creating his miniature ship, Mr. Morfee followed exactly a contemporary model of the ST. GEORGE, a piece of great value, owned by the Metropolitan museum of New York, making many visits to the museum to study its details, and securing photographs of it from which to work. The lines of the hull, and the rigging and sail plans were obtained from works on naval architecture that give them in exact measurements, from the original builder's plan.

The materials used in the model include white pine for the hull, various hard woods for the rails and carvings, brass and other metals for various fittings, and linen thread of different sizes for the rigging.



Francis T. Bowles 1858-1927

REAR ADMIRAL F. T. BOWLES, U.S.N., retired, died at his home in Barnstable, Mass., on Aug. 3 at the age of 69. He had been ill for several months. Known as one of the great naval constructors, Admiral Bowles had a remarkably rapid rise in the navy becoming rear admiral in 1901 at the age of 43, the

retired from business but continued active in public affairs, for six years being president of the Cape Cod chamber of commerce.

He was born in Springfield, Mass. Oct. 7, 1858 the son of Benjamin F. and Mary E. (Bailey) Bowles. At Annapolis he distinguished himself in mathematics and was sent to study



youngest man ever to be given this high rank.

He left the naval service in 1903 to become president of the Fore River Shipbuilding Co. and in eleven years built up this organization to world fame. It was he that obtained the order from the Argentinian government for the two battleships MORENA and RIVADAVIA recently rebuilt at the same yard. In 1914 Admiral Bowles

naval architecture at the Royal naval college. Shortly after his graduation he returned to the Norfolk navy yard where he began working on the plans for the new American navy that was then in the making. He is credited with proposing the first twin screw installation on an American war vessel.

He was made chief constructor and given the rank of admiral under the McKinley administration and continued

in this position under Roosevelt. Admiral Bowles was one of the prime movers in the organization of the Society of Naval Architects and Marine Engineers and was its first secretary and for four years its president. Always taking an active interest in the merchant marine and the building up of American personnel he acted for a time as chairman of the commission of the Massachusetts Nautical school.

When the world war came he was called back into active work as assistant general manager of the Emergency Fleet Corp. and early in 1918 he was given personal charge of the three government ship-building yards, at Hog Island, the Submarine Boat Corp. at Newark, N. J. and the Merchants Shipbuilding Co. at Bristol, Pa.

After the war Bowles again retired, this time to his estate at Barnstable. He was always a strong supporter of naval preparedness and he favored the encouragement of the merchant marine in every way possible.

Ship Repair Yard Is Reorganized

A new company known as the Calumet Shipyard and Drydock Co. has been organized to carry on work of ship repairs and boat and yacht storage at south Chicago on the same site formerly occupied by the Kraft Shipyard and Drydock Co. at Ninety-fourth street and the Calumet river. An entire new line of machinery has been installed in the plate shop, machine shop and carpenter shop. An electric welding outfit and air compressor, afloat, is also part of the equipment.

The new plant is now ready and in operation. Members of the firm are, James A. Rogan, formerly superintendent of the Kraft Shipyard who has been identified with shipbuilding all his life, his father being one of the pioneer shipbuilders of Buffalo and Chicago, and August Hausler, in charge of the machine shop, who held a similar position in the Kraft organization and is well experienced in marine engine practice.

The new firm will do larger ship repair work of all kinds as well as local trade. Work will be attended to at all hours of the day and night at either south Chicago, Indiana Harbor, Gary and Chicago harbor. The drydock will be available at all times for scows, tugs, yachts etc.

William H. Powers has been appointed local inspector of boilers succeeding John L. Crone recently made supervising inspector.

Build Liner for Bermuda Service

Launch Four Screw Diesel Passenger Ship—Of Large Size—Elaborately Equipped and Decorated—Modern in Power and Accommodations

SHORTLY before high water on July 28 Workman Clark & Co. Ltd., Belfast, successfully launched from the North yard the quadruple screw motor driven passenger liner, BERMUDA, built to the order of the Bermuda & West Indies Steamship Co. Ltd., associated with Furness, Withy & Co. Ltd., for service between New York and Bermuda and also World cruising.

The arrangements for the launch had been planned with the utmost care and everything worked with smoothness and precision.

The BERMUDA is 550 feet in length, 74 feet beam and 45 feet in depth to the shelter deck, with a displacement of 20,000 tons.

The propelling machinery consists of four sets of Doxford opposed piston reversible oil engines, each of four cylinders 600-1800 fitted in main machinery room. Four electric generating sets, driven by diesel engines, are fitted in the auxiliary engine room, separated from the main engine room by a watertight bulkhead. In the auxiliary engine room two donkey boilers are fitted for generating steam for heating fuel and accommodation, and for cooking pur-

poses. The auxiliaries in the main are electrically driven, as are also the steering gear, capstans, windlass and winches.

There are seven decks devoted to passenger accommodation including exceptionally high promenade deck and dining saloon.

The first class public rooms occupy a considerable space on the promenade and boat decks; also on the upper and main decks, including observation lounge, social lounge with large gallery above, smoking room, veranda cafe, foyer, dining saloon, writing room and library, gymnasium, and a large dancing and promenade space aft of veranda cafe, which can be completely enclosed, or opened up as desired.

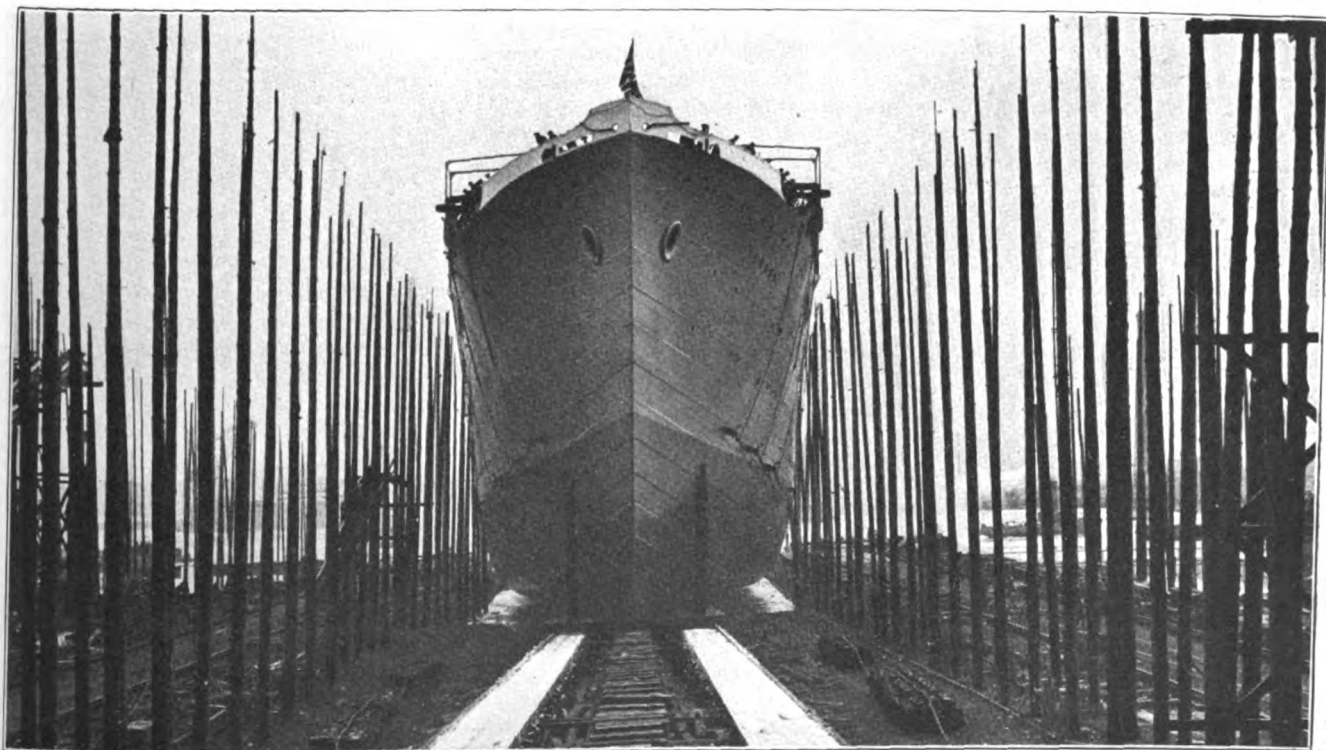
In addition there is a capacious swimming bath below the saloon deck designed in the Graeco-Roman style and faithfully reproducing the details of that period with the up-to-date equipment of the modern bath club.

The dining saloon, capable of seating over 400 passengers is a lofty apartment running through three decks with ceiling domes, lit by concealed lights and galleries at sides sup-

ported by alcove piers containing brazier lights.

The style of decoration adopted for this saloon is a modern treatment, Grecian in form. The motifs or ornaments being inspired by that of the Pompeian. Especially is that so in the bronze work surmounting the gallery fronts, the electric fittings and window casements. Panelling to the walls and all the decorative woodwork which is constructed in mahogany is painted in tones of beige or old ivory. The dining tables and chairs are of the classical form so much in vogue at the end of the eighteenth century in England. There are specially designed carpets in tones of brown, with curtains and chair coverings in an opal blue and gold coloring.

The foyer on the main deck which serves as reception hall on embarkation, is panelled in the style of the late Georgian period, the ornament and decoration being relieved in old gilt. Opening off this apartment is the central bureau, purser's office, chief steward's office and cloak room. Forward of the foyer is the main staircase and elevator, which communicate with all the passenger decks.



QUADRUPLE SCREW MOTOR PASSENGER LINER BERMUDA, TO RUN BETWEEN NEW YORK AND BERMUDA, LAUNCHED JULY 28, AT WORKMAN CLARK, BELFAST

There are two other similar staircases and elevators, one forward of the saloon for reaching the observation lounge on the boat deck and the swimming bath on F. deck, the third stair and elevator being arranged aft from the smokers room entrance down to E deck, and passing through large entrance halls on all the decks between.

Apart from the dining hall and foyer the public rooms are all on A deck and the boat deck. On A deck forward there is a charming library and writing room decorated and furnished in the style of the Adams brothers. Purity of detail and design are here reproduced, but kept subservient to the purpose for which the room will be used. Recessed bookcases are formed in between the windows, writing tables designed with a view to privacy and practicability, easy chairs, reading chairs, divans and small tables are arranged for the comfort of passengers and retaining the atmosphere of the home. These will be covered alternately with loose covers according to the zone of travel. Electric fittings are in gilt bronze and satin glass finish.

The lounge, with its orchestral stage and gallery, the domes above, is of the same generous proportions as the dining saloon. It is decorated in the style of the late seventeenth century. Large piers of the height of three decks, support a domed and decorated ceiling while the similar columns and pilasters support a gallery or mezzanine floor at sides. At one end is a stage. The silks and satins in colors of veaux-rose and figured damasks will be used for the curtains and coverings, together with delicately tinted walls in a soft bluish green. There will be a magnificent parquet floor for dancing in this saloon. Mahogany furniture consisting of various types of elbow, occasional and easy chairs, with small settees will be installed.

Elaborate Attention to Decorations

First class smoking room on the main deck is to be constructed on the lines of an old English manor house hall of the Tudor period. Here, will be the rough hewn oak timbers, supporting the beamed ceiling. The linen fold panelling will be set off by stone mullion windows with leaded lights. A large and generously proportioned recessed fireplace or ingle will be constructed with hewn stone forming hearth back and sides.

Although electric heating is to be employed throughout the ship, resemblance of wood fires is maintained in a large wrought Sussex iron grate with andirons and implements. Deep

seated lounge chairs and settees covered in hide, together with oak settees and elbow chairs will complete the furniture. Many objects of interest will also be added such as trophies of the chase, arms of the period, and paintings, representing reproductions of works by master painters of the sixteenth century.

The veranda cafe, approached through the after entrance hall from the smoke room is to resemble as nearly as possible, an open air loggia or terrace garden. Trelliage of old stone walls with columns around which will be climbing roses; herbaceous borders with grass margins to a stone paved courtyard. The garden seats, wicker furniture and bird bath, will complete the general scheme. The observation lounge, somewhat similarly treated to the veranda cafe, is approached through the lounge gallery and occupies a commanding position on the boat deck.

A large gymnasium on the top deck will be set out to supply the needs of all forms of recreation and physical exercises. The walls will be panelled in polished teak.

Can Accommodate 616 First Class

Passenger accommodation is arranged for 616 first class, and 75 second class. The first class accommodation includes a number of de luxe suites furnished and decorated in various styles, mostly in the period around the eighteenth century and consists of a sitting room, bedroom, bathroom and veranda. Seventy of the state-rooms are fitted with private lavatories. Many of these rooms are arranged for individual accommodation; others are fitted up for two passengers, and in certain cases with provision for a third passenger. The total number of first class cabins is 250.

The accommodation has been specially considered, not only from the point of view of the conditions obtaining on the New York-Bermuda service, which is a luxury and pleasure trip, but also with a view to use on World cruises from three to six months in duration.

Each stateroom is fitted with mahogany bedsteads, exceptionally good wardrobe accommodation having the latest type fittings, dressing table, chests of drawers, open type wash basin with running water supply, and full length mirror. The walls are panelled in a pleasing style, and color in various shades, while the floors are in designs of rubroleum tiling overlaid with rich carpet rugs.

The electric lighting is of the in-

direct type, and provides a most restful and pleasing effect. Each berth is fitted with a reading lamp, which can be full on or dimmed by means of a special switch.

The rooms are individually heated and ventilated by a mechanical system, through directional louvres, from which the flow of air can be regulated as desired.

The second class accommodation embraces about 30 staterooms, arranged for two, three or four passengers, with public rooms comprising dining saloon, foyer and lounge, and ample promenade space is provided on the shelter deck.

Spacious Clear Deck Spaces

In view of the intended services of the vessel, special attention has been paid to the provision of spacious promenade and spaces for deck games. The boat deck and the deck below are extended beyond the beam of the ship by as much as 2 feet 6 inches each side. On the boat deck there is an area of about 70 feet long by the extended beam for deck sports and dancing, while on the promenade deck below a similar space is provided extending right to the stern of the vessel. A portion of this space has been enclosed, the screen being fitted with large vertical sliding windows, and this space virtually forms a public room. Forward of the spaces mentioned there is a large deck area between the deckhouse and the ship's side available for deck chairs and promenading.

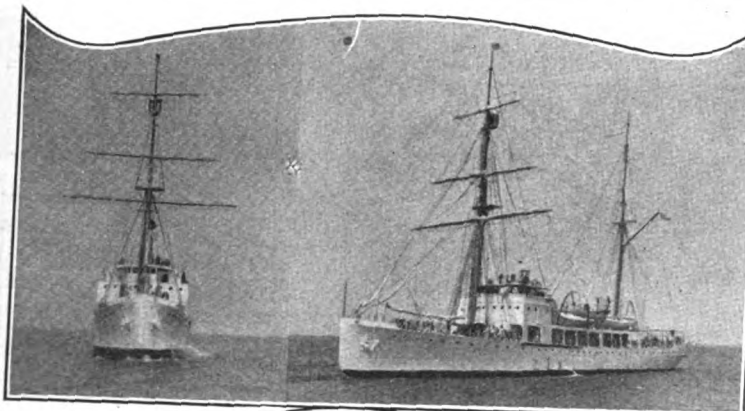
At the fore end of A deck, and around the sides for a considerable extent the promenade space is screened in, similar to the dancing space, except that the after end remains open.

Other features of the first class passenger accommodation include hair-dressers' shop, information bureau, kinema, and an up-to-date hospital and surgery are provided. The state-room corridors are most spacious and access between the various decks is obtained by the handsome and roomy electric elevators and broad and easy staircases.

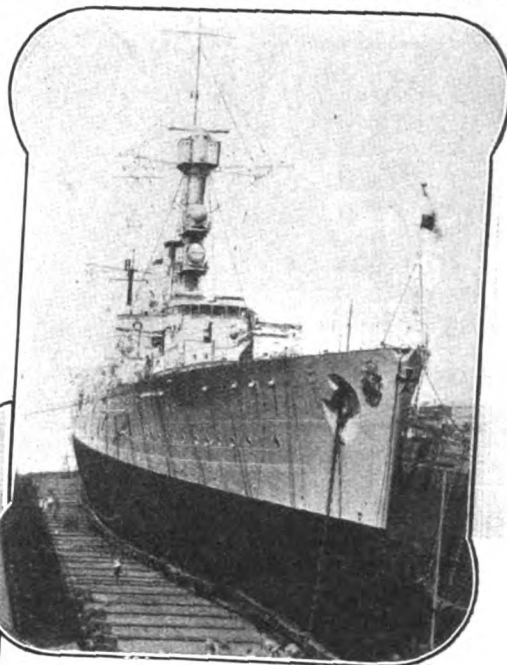
The service arrangements are on the very latest plan; the cooking appliances are largely electrical, and arrangements are made for dining the whole of the passengers at one time, necessitating very extensive equipment in the saloon kitchen and pantry. The various passenger decks and public rooms have service pantries attached, all communicating with the main galley deck by a series of service lifts.

(Continued on Page 50)

Latest Marine Events in Pictures



At Left—Diesel electric coast guard cutter Northland recently completed at Newport News and now in Behring sea, relieving the old Bear in iceberg patrol and other service. Sea trials held April 26. Final ten-day trial May 14. Speed 12 knots. Single propeller and 1000 s.h.p. at 120r.p.m.



German cruiser Emden, of 6000 tons, a late addition to German navy, in dry-dock at Todd Shipyards Corp., Seattle, for voyage repairs, and painting. She is on a good will voyage around the world

M. S. Minnipa, shown at right, is intended for service between South Australian ports. Length B. P., 252 ft. 6 in.; beam, 39 ft. 9 in.; depth to shelter deck, 24 ft. 3 in.; speed, 14 3/4 knots. One 8-cylinder, 4-cycle, single acting diesel, 4278 i.h.p., 149 r.p.m.

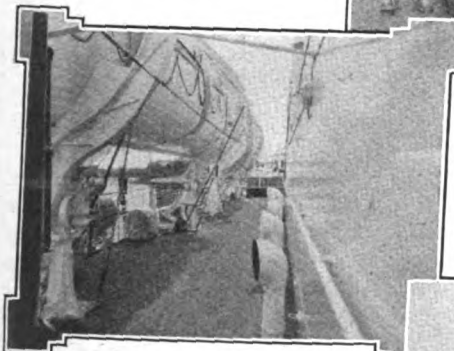


At Left—Single screw motor passenger ship Minnipa built by Burmeister & Wain for the Adelaide S. S. Co.

Below—Life boats on M. S. Minnipa in Welin davits. Gives unobstructed view from deck



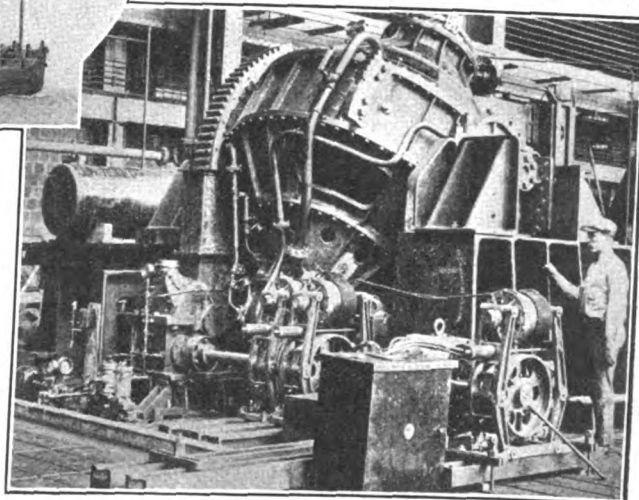
Above—Mother ship and destroyers. In time of war many such tenders are needed to supply our men o' war with food, ammunition, oil, repairs and other supplies. In an emergency these vessels must be recruited from the merchant marine



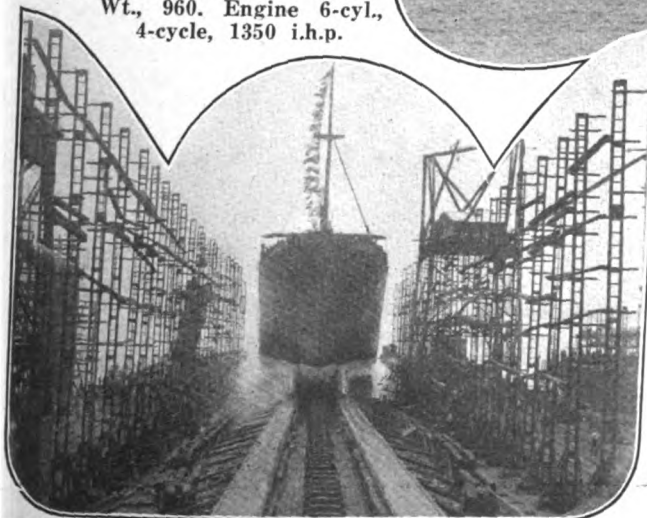
M. S. Nimbin for North Coast Steam Navigation Co., Sidney, by Burmeister & Wain. L. B. P. 213'; beam, 35'; depth, 13'; D. Wt., 960. Engine 6-cyl., 4-cycle, 1350 i.h.p.



Below—Powerful gyroscope stabilizer, 9' high by 10' wide, to go on largest yacht in the world, building for R. M. Cadwalader at Pusey & Jones. She is 294 feet long and will have two 1500 b.h.p. Bessemer diesels

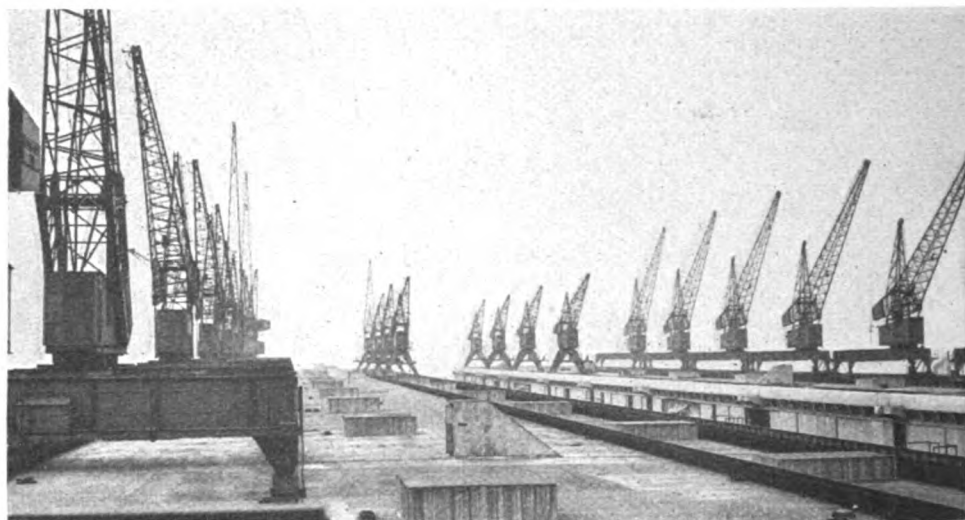


At Left—S. S. Dixie, fast passenger and freight steamer, building for the Southern Pacific Steamship Co. at the Federal Shipbuilding Co., Kearny, N. J., launched July 29. She is 445 feet long and will accommodate 279 first class and 54 third class passengers



Dock Management Progress Section

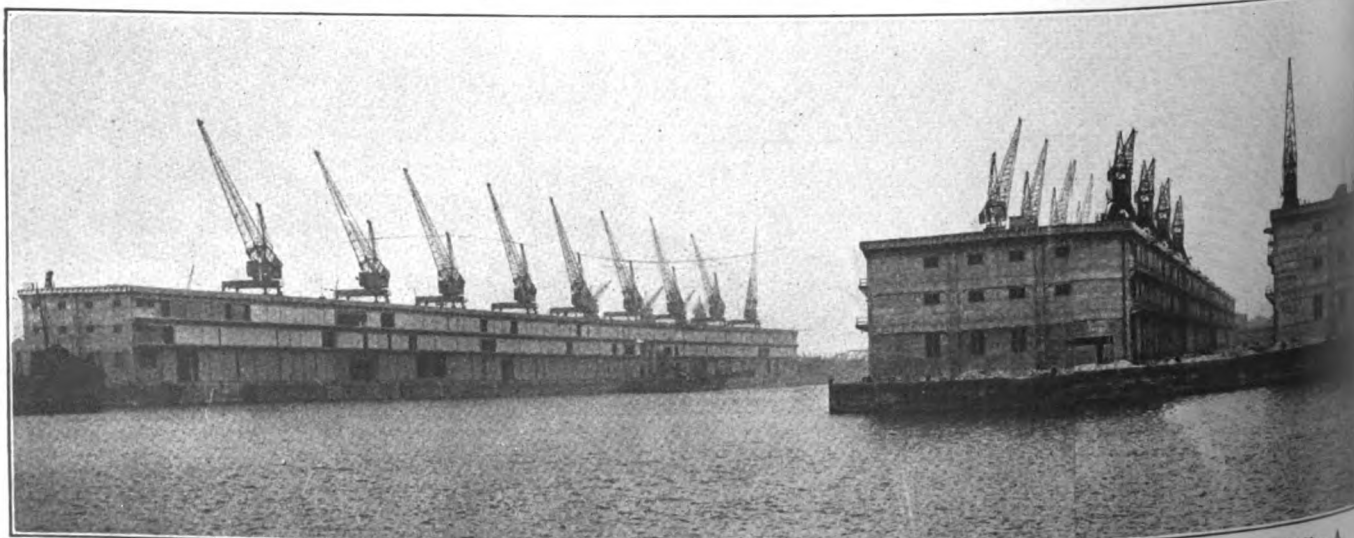
How Successful Dock Operators Have Met
Problems of Giving Best Service to Ships



Electric crane equipment on the roofs of the pier sheds of the Gladstone Docks, Liverpool

Liverpool's New Dock System Has Modern Cargo Handling Equipment

ON JULY 19, the Gladstone docks of the Mersey docks and harbor board at Liverpool were opened by King George V, accompanied by Her Majesty the Queen. This indicates with what importance the successful completion of this tremendous project is looked upon by the whole nation. Over twenty years have been consumed in carrying out this work and it has cost over \$36,400,000. The new docks add to the accommodations of the port of Liverpool the following: water area 58¼ acres; quayage 3 miles; ground covered by sheds 19 acres; and gross floor area of sheds 60½ acres. The new entrance lock is 1070 feet long, 130 feet wide and is divided into two compartments with sills 20 feet below bay datum or 30 feet below Liverpool old dock sill. On an ordinary spring tide of low water this would give a depth of water on the sills of 22 feet; at low water ordinary neap tides a depth of 27 feet 6 inches; at half tide level 35 feet 2 inches; at high water ordinary



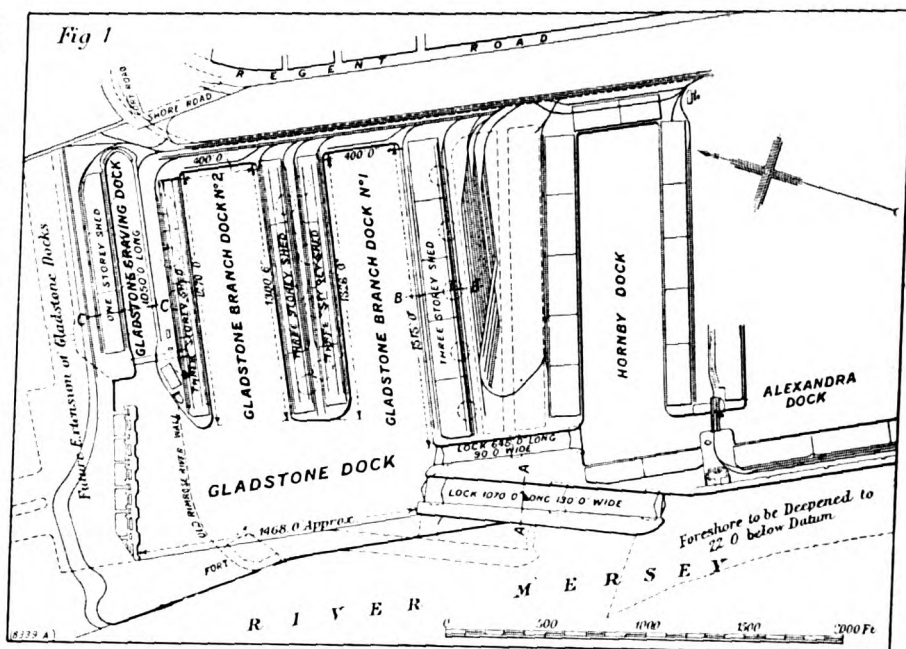
RECENTLY COMPLETED GLADSTONE DOCKS AT LIVERPOOL, FORMALLY OPENED BY THE KING AND QUEEN ON JULY 19—A

neap tide 42 feet 9 inches and at high water ordinary spring tides 48 feet 4 inches.

The graving dock, which of course is an essential part of the Gladstone docks system, can also be used as a wet dock. It was formally opened by the King and Queen in 1913 and is the largest drydock in Europe.

Liverpool, where this dock expansion has taken place, as a city covers an area of 21,242 acres and has a population of 837,600. It is one of the greatest seaports of the world and is the fourth largest city in Great Britain. The city is situated on the Lancashire shore of the estuary of the Mersey and was founded in 1207 by King John. Its progress was slow until the beginning of the eighteenth century when it began to flourish and expand at an enormous rate. That expansion was due largely to its geographical position which made it the natural gateway for the entrance products of the West Indies and America and the outlet for the manufacturers of all of north England as well as the Midlands which after the industrial revolution began to make huge and increasing demands upon the shipping facilities provided by Liverpool merchants. Their response to that demand gave Liverpool a leading position in the shipping world which it has retained to the present day.

The Gladstone docks project was consistently advanced before the War, the great graving dock being completed shortly before, in 1913. It was impossible to prosecute this work during the war and for some time afterward. In 1921 work was actively recommenced and it was carried through with great energy by the staff of the Mersey docks and harbor board under the direction of Chief Engineer Thomas M. Newell.



Layout of the new Gladstone Docks system at Liverpool

The new dock system is situated to the north of the older docks and nearer the mouth of the Mersey. In shape the area occupied is roughly a square with the sides approximately a half mile in length. The accompanying illustration which is reprinted from the British publication *Engineering* shows clearly the limits of the improvement and its layout in detail. An accompanying illustration shows a view of the new piers and slips of the Gladstone docks taken from the basin.

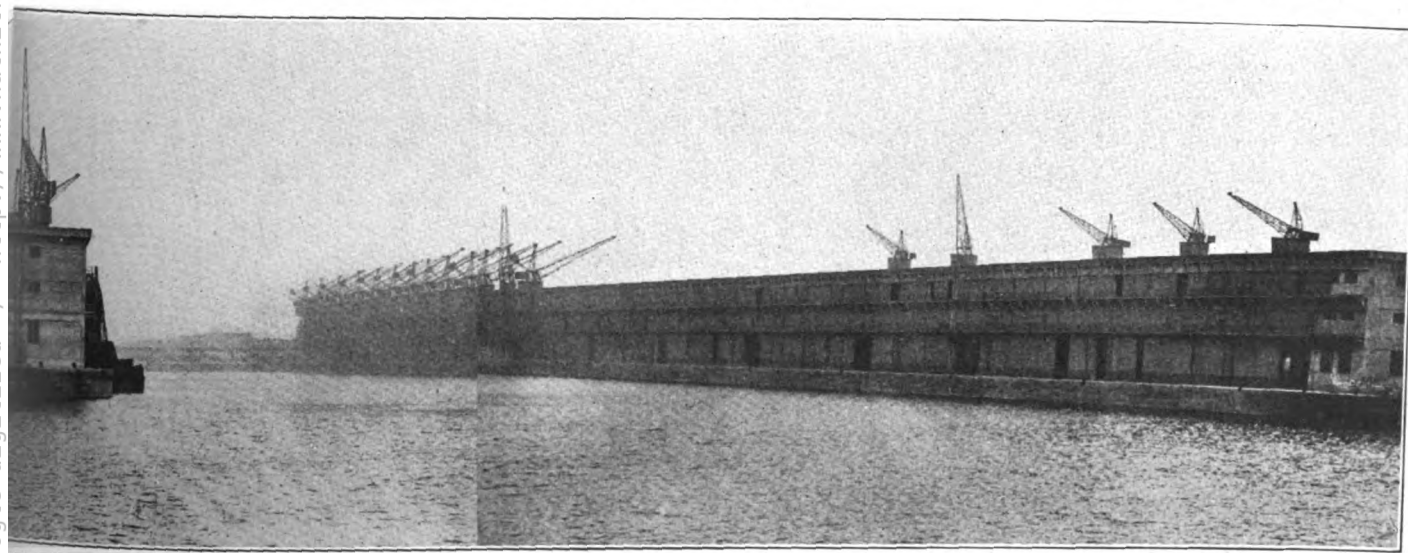
It must be borne in mind that this elaborate dock development has been carried out where the natural depth of water is insufficient. It is in effect a locking system. The waters of the high tides being retained at an appropriate level within the dock basin and slips. Deep ships of course will find it necessary to leave on the proper tide. Ships of say up to 28 feet draft

can go in and out any time except an hour or two each side low tide.

It is interesting to note that the first wet dock built at Liverpool and also the first commercial wet dock in England was authorized in the reign of Queen Anne. This first wet dock had a water area of about 3 acres, compared with the 56 acres of the new Gladstone docks. Its sill was 10 feet above the bay datum or 30 feet higher than the level of the sill of the Gladstone docks. This comparison is in itself a striking illustration of the great progress made in the maritime and engineering fields.

The piers of the Gladstone docks have been laid out with the greatest care to make possible rapid and economical loading and discharge of ships. The 2½ or more miles of berthing space which is provided is practically

(Continued on Page 50)



REAR LOCKED BASIN ABLE TO ACCOMMODATE THE LARGEST SHIPS AFLOAT—PIERS ARE EQUIPPED WITH MODERN ELECTRIC CRANES

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	478	1,910,229	553	2,253,495
June	498	2,093,540	566	2,334,128
May	525	2,167,154	539	2,179,208
April	487	2,048,786	565	2,353,404
March	460	1,936,478	515	2,074,694
February	408	1,679,912	468	1,962,365
January	417	1,736,991	455	1,868,270
December	466	1,867,630	548	2,171,938
November	454	1,909,756	477	1,885,401
October, 1926	486	1,954,853	542	2,301,465

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)				
(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	83	186,182	53	110,614
June	95	213,122	66	180,861
May	88	196,606	47	86,214
April	86	194,135	52	123,179
March	96	223,255	58	131,147
February	81	190,536	48	126,619
January	79	208,354	59	167,258
December	145	373,902	129	341,421
November	168	429,408	139	377,016
October, 1926	145	370,112	128	329,420

Boston

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	147	401,008	103	326,695
June	155	344,548	99	242,957
May	130	318,196	100	262,982
April	120	343,388	72	201,868
March	95	301,413	59	187,556
February	83	277,063	40	119,246
January	88	266,147	51	159,241
December	97	286,013	52	170,314
November	89	275,245	56	177,876
October, 1926	109	300,921	58	171,938

Portland, Me.

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	37	62,890	35	55,144
June	24	31,714	25	34,855
May	24	38,244	22	37,246
April	21	37,182	21	37,114
March	23	63,195	27	73,944
February	23	65,826	21	59,178
January	26	59,156	26	66,791
December	32	71,748	34	77,400
November, 1926	20	34,092	20	34,917

Providence

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	11	37,384	5	17,628
June	8	12,559	5	15,930
May	9	36,882	6	25,950
April	7	28,776	5	18,903
March	7	26,065	7	25,780
February	3	10,380	6	23,696
January	3	9,632	6	20,091
December	5	17,666	5	19,074
November	2	7,689	2	7,690
October, 1926	7	23,091	8	29,815

Portland, Oreg.

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	31	110,966	35	119,824
June	24	91,554	33	118,631
May	24	86,618	28	98,277
April	31	120,431	44	159,247
March	21	78,379	31	106,768
February	15	63,320	28	106,355
January	29	102,736	39	134,127
December	34	131,426	56	213,861
November	34	135,455	48	178,820
October, 1926	41	151,013	59	217,745

Baltimore

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	128	384,450	130	368,096
June	125	375,204	125	376,019
May	112	333,395	117	340,274
April	131	409,145	127	377,039
March	120	355,162	117	323,893
February	100	308,501	95	301,401
January	117	362,553	126	361,277
December	245	722,141	269	783,058
November	292	818,707	298	853,723
October, 1926	271	791,999	261	783,263

Norfolk and Newport News

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	42	112,442	77	201,882
June	34	61,041	82	190,228
May	27	56,458	70	179,658
April	23	54,983	77	209,869
March	32	87,970	98	264,863
February	31	88,928	77	232,403
January	49	134,238	118	350,311
December	216	636,483	254	781,545
November	184	527,290	281	782,914
October, 1926	252	683,297	307	850,828

Savannah

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
January, 1927	39	107,763	34	96,410
December	38	107,763	36	104,445
November	40	97,689	33	102,822
October	50	115,821	39	98,521
September	46	120,271	42	113,706
August	42	97,563	30	76,080
July	33	88,673	27	71,040
June	43	106,733	36	95,000
May	36	96,175	32	85,198
April, 1926	37	104,323	36	105,821

Key West

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	78	84,790	79	84,186
June	84	97,585	85	97,535
May	105	113,090	106	115,564
April	78	79,818	74	75,913
March	80	91,602	75	93,700
February	90	101,179	84	102,571
January	89	116,112	89	119,191
December	92	113,985	87	104,448
November	97	116,965	97	115,032
October, 1926	78	92,987	79	96,718

Mobile

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	94	198,668	89	190,965
June	97	206,410	84	165,649
May	114	237,650	103	205,876
April	107	240,273	108	218,246
March	107	217,848	98	197,395
February	99	249,158	86	199,907
January	96	224,819	83	191,752
December	82	164,129	82	174,618
November	90	200,801	83	182,839
October, 1926	98	213,430	99	211,785

Seattle

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	45	183,023	40	162,121
June	38	159,687	39	162,632
May	41	177,869	42	169,083
April	46	186,581	49	185,593
March	39	159,034	44	175,937
February	40	170,776	45	195,692
January	53	233,914	47	192,233
December	42	176,065	54	201,988
November	63	234,742	54	231,843
October, 1926	56	236,587	55	230,412

New Orleans

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	250	615,826	241	580,233
June	248	606,501	267	750,337
May	277	640,252	269	627,452
April	262	642,846	268	664,461
March	276	712,619	278	695,333
February	240	632,092	249	628,762
January	240	697,039	244	712,384
December	259	745,636	266	755,204
November	253	731,871	238	685,253
October, 1926	236	673,606	250	721,603

Charleston

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	19	41,460	20	44,633
June	25	67,366	24	62,132
May	26	79,355	24	63,862
April	23	60,557	26	69,565
March	23	84,155	31	85,476
February	27	81,829	33	158,088
January	33	96,054	31	77,315
December	33	94,427	39	102,724
November	39	114,449	39	108,386
October, 1926	11	32,323	15	40,127

Galveston

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1927	43	114,628	82	248,344
January	47	146,318	97	318,609
December	56	147,040	103	302,474
November	64	180,917	118	359,949
October	47	112,816	118	352,306
September	52	139,219	127	368,308
August	55	129,477	131	389,432
July	60	164,241	116	352,200
June	53	119,497	72	188,444
May, 1926	28	65,578	61	186,469

Los Angeles

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1927	121	452,983	106	407,695
June	178	484,561	125	418,967
May	161	470,471	138	456,885
April	179	477,762	173	441,374
March	156	465,128	165	442,022
February	144	418,190	144	404,753
January	137	420,426	138	381,692
December	155	438,464	123	386,004
November	184	439,736	138	397,397
October	187	448,038	155	421,897
September, 1926	151	406,314	211	386,739

San Francisco

(Exclusive of Domestic)				
Month	Entrances		Clearances	
	No. ships	Net tonnage	No. ships	Net tonnage
June, 1927	154	556,225	140	526,976
May	148	545,414	137	510,569
April	141	531,380	137	518,577
March	145	555,324	148	586,354
February	147	561,214	138	513,253
January	133	497,560	141	522,896
December	134	520,962	134	500,347</

Equipment Used Afloat, Ashore

Electric Hoists for Launching Boats—Path and Position Indicator—Magnetic Master Compass—Streamline Rudder Saves Power and Reduces Yawing

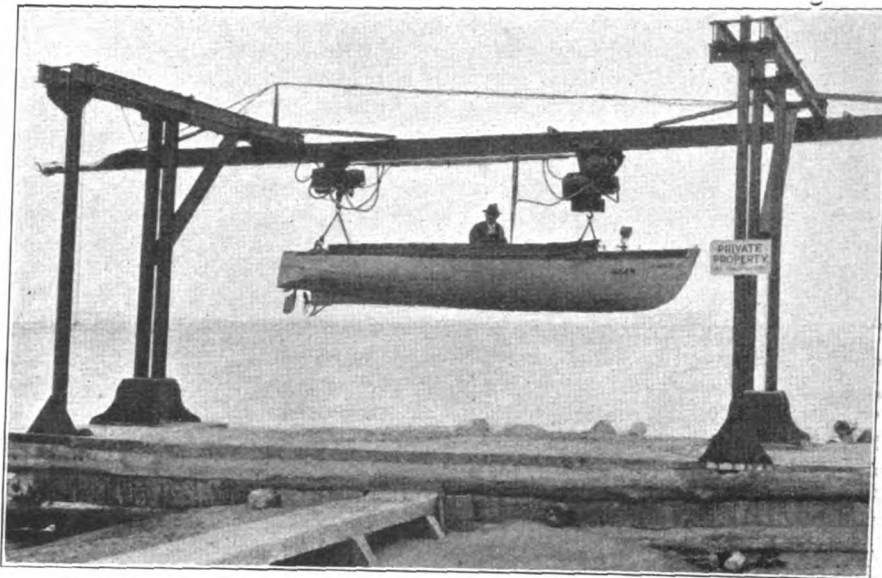
THE accompanying illustration shows the application of electric hoists for handling smaller boats. The track and the hoists were built and erected by the Chisholm-Moore Mfg. Co., Cleveland, on the Lake Erie water front at the residence of A. H. Chappelka, Willoughby, O. The steel motor boat shown is of regular stock model manufactured by Mullin Body Corp., Salem, O.

This installation consists of an I-beam track and two small weather-proof and completely enclosed electric hoists. The I-beam track is suspended from the roof supports of the inside of the boat house and is carried by structural steel supports on the outside. One of the electric hoists is attached to a motor driven trolley and the other to a plain push trolley. The two hoists and trolleys are connected by a swiveling "stiff-arm" or rod the length of which is determined by the length of the boat. Conductor wires strung along the track supply the electric current to the hoists and trolley.

Control ropes for hoisting and conveying are within easy reach of the operator. All that is necessary to start the hoist motors is a pull on the proper control rope. The hoists start lifting the boat to the desired height. A pull on another control rope causes the motor driven trolleys to move along the track. When the boat reaches the right point a pull on the proper control rope lowers the boat into the water. When desiring to return the boat to the boat house the same operations lift and convey the boat to its resting place.

Provision for disconnecting the electric current from the conductor wires after the boat has been lowered into the water can easily be made by locating a remote control switch at the water end of the track and the switch can be turned off before leaving the pier and turned on upon arrival.

Though this particular installation applies to the launching of a boat from a boat house, it is entirely possible that a practical application could be made of similar hoists for putting launches, motor life boats or other larger boats carried on board ship into the water, as required, with a high degree of reliability.



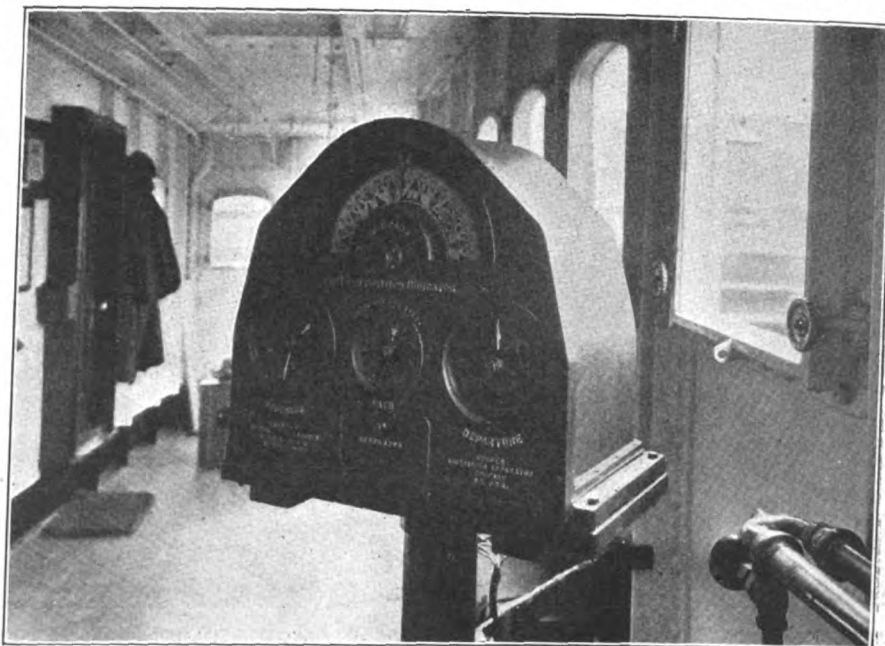
ELECTRIC HOISTS MAKE LAUNCHING OF BOATS AN EASY MATTER

New Aids to Navigation

By Robert G. Skerrett

MUCH thought and effort has been expended in the development of devices to make navigation of ships safer and surer. As a result of ten years of work, two

instruments, one known as a path and position indicator and the other as a magnetic master compass, have been developed by Edward L. Holmes, who is the inventor, and these instruments



PATH AND POSITION INDICATOR ON BOARD AN AMERICAN FREIGHTER AND OPERATING IN CONJUNCTION WITH A GYRO COMPASS

MARINE REVIEW—September, 1927

35.

are now being manufactured by the Holmes Navigating Apparatus Co., 48 Cedar St., New York city. They have undergone seagoing tests of an extended nature and are shown installed on an American freighter and tanker in the accompanying illustrations.

The path and position indicator is designed to enable the man at the wheel to keep on the set course with greater certainty. It will also serve as a positive and automatic check on the familiar methods of dead reckoning. It will in effect not only trace the course the ship has followed but it will serve to indicate the position of the vessel at any time in relation to the set course.

The magnetic master compass is the controlling unit for the path and position indicator and it is capable of operating electrically one or more repeater compasses without having its own magnetic sensitiveness impaired. In the precision of its performance it is just as dependable as the best master clocks that operate electrically a system of repeater clocks, at the same time losing none of those characteristics or functions essential to its purpose as a navigator's compass.

The inventor spent much time on the bridge of ships studying at first

hand the difficulties of navigation. One of these difficulties was the correction for yawing. The cumulative effect of yawing and the uncertain work of the man at the wheel might carry the vessel to one or the other side of the set course, though traveling parallel to it. When estimating a ship's position by dead reckoning, when it is impossible to make sun or star readings, the matter of correcting for yawing becomes a difficult problem. This error under certain conditions of wind and sea may amount to as much as 15 or more miles in the course of a 24-hour run. In certain waters this might mean danger and at all times it is a waste of time and fuel. It was to aid and correcting this difficulty that the two instruments mentioned here were developed.

The path and position indicator can be controlled either by a gyro compass or by the magnetic master compass, as has been established by long voyages at sea, but the instrument was originally conceived as a companion apparatus for the magnetic master compass. In this compass the movement of the needle in a special electrolyte alters or unbalances the resistance of two opposing electric circuits through which a weak alternating current flows. The needle float

carries four platinum electrodes—terminals, respectively, of insulated sections of the two opposed electric circuits; and on adjacent sides of the bowl are four segmental plate electrodes also of platinum so as not to be injured by the electrolyte. There is always a fluid-filled gap between each electrode on the magnet float and its neighboring electrode on the side of the bowl; and it is the interval between each pair of electrodes varying according to the direction in which the magnet float moves that determines the measure of resistance offered to the current as it flows through the opposing or opposite electric circuits.

Any angular movement of the magnet float will upset the normal balance existing between the two circuits when the float is at rest and this unbalancing is utilized to effect a sensitive relay, which in its turn controls a small reversible motor. The motor causes a follow-up ring mounted above the compass bowl to turn to the right or to the left so as to bring the markings on the phantom compass card in accord with those of the regular card in the bowl. As the follow-up ring is thus moved to right or left by the motor, until unison is

(Continued on Page 46)



AT LEFT—MAGNETIC MASTER COMPASS ON BOARD AN AMERICAN TANKER, CONTROLLING A HOLMES PATH AND POSITION INDICATOR AND A REPEATER COMPASS IN THE PILOT HOUSE. AT RIGHT—PATH AND POSITION INDICATOR ON AMERICAN FREIGHTER OPERATED IN CONJUNCTION WITH A GYRO COMPASS

Southern Pacific Liner Is Launched at Kearny

Sponsored by Mrs. Lewis J. Spence wife of the executive officer of the Southern Pacific Co., a new passenger and freight steamer, latest addition to the company's fleet, was christened DIXIE and was launched July 29 at the yard of the Federal Shipbuilding & Drydock Co., Kearny, N. J. This vessel was designed for the coast-wise service by A. S. Hebble, superintending engineer of the line and is an oil burning steamer driven by De Laval compound turbines with double reduction gears designed for 7100 normal shaft horsepower, with 10 per cent maximum overload, at 90 revolutions per minute. The anticipated speed is 16 knots.

Accommodations will be provided for 379 passengers and a crew of 114. The total cost is about \$2,400,000. She is built on the Isherwood system of longitudinal construction. General characteristics are: length overall, 445 feet; length between perpendiculars 427 feet; beam molded, 60 feet; depth molded, to saloon deck 37 feet; designed load draft 25 feet, 6 inches; deadweight capacity about 6900 tons; displacement 12,160 tons; and cubic capacity about 420,000 cubic feet.

The vessel, of hurricane deck type, is fitted with three complete decks extending fore and aft with an orlop deck in the foreward hold for strength and stiffness. Around the super-structure the promenade deck is approximately 8 feet wide. There are to be two pole masts and one smokestack.

Passenger quarters will be located on the boat, promenade, and saloon decks. The decks and division bulkheads in way of accommodations will be of steel making them fire proof. On the boat deck will be located deck and engine officers quarters as well as mess rooms and wireless rooms. These quarters will be at the forward end. Accommodations for waiters and cooks will be on the main deck aft and for the firemen and oilers on the main deck amidship. Seamen will be accommodated in a deck house on the forward saloon deck.

American colonial design will be used for the interior of passenger quarters. Public rooms will consist of, lounge, library, music room, social hall, writing room, smoking room, cafe and barber shop and an enclosed sun parlor and dance room. First cabin accommodations will be of outside rooms well ventilated. There will also be suites, including sitting

room, bedroom, toilet and bathroom. Passenger quarters will have hot and cold water and cooled drinking water.

In addition to a Sperry gyro pilot control and helm angle indicator the steering gear will be controlled from the pilot house by wire rope transmission. The vessel will also have a Sperry gyro master compass with repeaters. Boiler equipment will be made up of four Babcock and Wilcox marine type, watertube boilers operating at a working pressure of 350 pounds per square inch and with 200 degrees superheat. Arranged fore and aft with a center athwartship fire room the boilers will have air heaters, forced and induced draft and will burn oil.

Standard Oil Subsidiary

It is interesting to note that the shipping interests of the Standard Oil Co. (N. J.) are to be segregated from the other activities of the company. It is said that papers of incorporation for the new company, which is to be known as the Standard Shipping Co., has been filed in Delaware. The capitalization called for is \$40,000,000 consisting of 400,000 shares at \$100 par value. It is understood that Robert L. Hague, present manager of the marine department is to be the chief executive officer of the new subsidiary, which will be one of the largest shipping companies of the country.

New Colliers Planned

Berwind-White Coal Co. it is reported are having specifications prepared for two new colliers. The new vessels are to have a carrying capacity of 6500 tons each and will be driven by steam turbines and reduction gears at a speed of about 12 knots. It is planned to go further in high steam pressures than for the S. S. DIXIE now building for the Southern Pacific lines. About 400 pounds per square inch is the pressure talked about and if adopted it will be the highest so far used in this country.

Accept Bethlehem's Bid

The shipping board, on Aug. 16, authorized the acceptance of the bid of the Bethlehem Shipbuilding Corp. of \$416,000 for the conversion of the S. S. WILCOX into a modern motorship. The propulsive power will be furnished by the recently completed and tested double acting diesel engine of 3680 brake horsepower, at 110 revolutions per minute, built by the New London Ship & Engine Co. Groton, Conn.

Midland Has Completed Canal Freighters

The program of four canal size freighters which the Midland Shipbuilding Co., Midland, Ont., has been engaged in since early last fall is now completed with the going into commission of the last of the four in July. These four freighters are the CITY OF HAMILTON, CITY OF MONTREAL, SASKATOON and WEYBURN. The keel for the first two were laid in October, 1926, the vessels were launched January, 1927, and went into commission in May. The keels for the latter two were laid in January last, they were launched in June and went into commission in July of the present year.

The CITY OF HAMILTON and CITY OF MONTREAL are identical package freight steamers of the following dimensions: Length overall, 238 feet; length between perpendiculars, 230 feet; breadth, 38 feet; depth, 23 feet; deadweight on 14 feet draft, 1700 tons; gross tonnage, 1665; net tonnage, 972. The WEYBURN and SASKATOON are also sister package freight steamers but are of somewhat larger dimensions though quite similar in every other respect to the first two. Their dimensions are: Length overall, 258 feet; breadth, 42 feet 9 inches, depth, 26 feet; deadweight on 14 feet draft, 2400 tons; the SASKATOON is of 1455.99 net tons and 2411.94 gross tonnage while the corresponding tonnages for the WEYBURN are 1452.86 and 2407.60.

All four vessels are built of steel throughout to highest class in the British corporation. There is a complete double bottom, 3 feet deep which is divided into four compartments with a total water ballast capacity for the two small vessels of 460 tons and of about 800 tons for the two larger vessels. There are three compartments in the cargo hold each served by two hatches on the spar and 'tween decks with line shafting running under spar deck for the rapid handling of package freight. All freight of a heavy nature is handled by booms on main and fore masts.

The propelling machinery consists of one triple expansion engine with cylinders 18 x 30 x 50 inches and 36 inch stroke. The engines were built to order in England and imported knocked down. Steam is supplied by two scotch marine boilers of 13 feet 6 inches diameter by 11 feet long, burning coal. Accommodation on these vessels is of usual layout for service through the Welland canal.

Reviews of Late Books

Life In A Man O' War or Scenes in Old Ironsides, by a Fore-Top-Man with preface by Elliot Snow, Rear Admiral, C. C. U. S. N., cloth 288 pages, 7½ by 10 inches; published by Houghton Mifflin Co., New York and furnished by MARINE REVIEW, Cleveland, for \$10.00 postpaid, and in Europe by the Penton Publishing Co. Ltd., Caxton House, London, for £2 10s.

As indicated by the sub-title of this book it is concerned with the life on board the frigate OLD IRONSIDES during the period between April 10, 1839 and Oct. 31, 1841 during which time, 535 days, she was at sea 392 days and cruised over 45,000 miles. The original publication on which this book is based was by Lydia R. Bailey, Philadelphia in 1841 and we are indebted to the research into the history of OLD IRONSIDES made by Admiral Snow for the re-publication of this book in attractive form. Admiral Snow states that Henry James Mercier, who with William Gallop was one of the two original copyrighters of these very graphically pictured scenes of life on board OLD IRONSIDES, is most likely the author.

It is difficult to imagine a better record complete in detail of the life at sea on a man o' war in the period covered than is found in this book. This edition has been re-printed verbatim from the original edition of 1841 without correction or modernization of spelling. An idea of the contents of this book may be had from some of the following chapter heads: Joining My Ship; Outward Bound; Reefing Topsails; Sailors Drill; Bill Garnet's Yarn; The Grog Expended; Burial at Sea; Revels on San Lorenzo; Description of a Man O' War; Capturing a Whale; Lines on the Death of Commodore Claxton; Homeward Bound; The Happy Return.

The book is printed in large clear type and is illustrated with many old prints among which are, the CONSTITUTION in the battle of Tripoli; reefing topsails; deck of the CONSTITUTION at the commencement of the action with the GUERRIERE; sheer and half breadth plan of the CONSTITUTION and a very interesting reproduction of a profile and inboard plan of this old ship made at the Boston navy yard in 1847. There is also a very interesting illustration of the midship section of the CONSTITUTION drawn from measurements taken at the Boston navy yard 1925-1926.

The publication of this book serves

to preserve for future generations a well told account of life at sea before the era of mechanically propelled ships. It upholds the tradition of Yankee seamanship and will help to inspire interest and love for the sea on which must be based the future of an American merchant marine.

Diesel Engines, by Arthur H. Goldingham M.I.M.E.; cloth, 255 pages, 5½ by 8¾ inches; published by Spon and Chamberlain, 120 Liberty St., New York and E. & F. N. Spon Ltd., London, and furnished by MARINE REVIEW Cleveland for \$7.50 postpaid and in Europe by the Penton Publishing Co., Ltd., Caxton House, London, for 37s 6d.

This book printed in excellent type on good paper and very completely illustrated with plates as well as page illustrations describes marine and stationary diesel engines and gives numerous formulas for their design and also instructions for installation and operation. This is the third edition and it has been thoroughly revised and enlarged. The author states that there has been notable progress in the design and construction of marine and stationary diesel engines and especially in the former in recent times which made it necessary to revise and rewrite the greater part of the previous edition.

This book is comprehensive in scope due to the cooperation of numerous manufacturers who furnished data of their designs. It is accurate and practical in character so that it can be read and readily understood by the practical operating man.

Four chapters are devoted to discussing first principles, methods of operation; advantages and disadvantages of different types; the design of various parts; discussion of 2 and 4 cycle types; comparison of single and double acting, fuel injection; sectional views of important parts. Chapter III of the first four chapters covers the testing of diesel engines with tabulation of results obtained with discussions of indicator cards reversing etc. The fourth chapter is concerned with the installation, operation and correction if faults develop. Chapters V & VI are devoted exclusively to marine diesel engines giving illustrated descriptions of various 2 and 4 cycle diesel engines. The seventh and last chapter is devoted to stationary diesel engines.

Merchant Shipping Industry, by H. C. Calvin and E. G. Stuart cloth, 373 pages, 5½ by 9 inches, published by C. John Wiley & Son Inc. New York and furnished by MARINE REVIEW Cleveland for \$4.00 postpaid and in Europe by the Penton Publishing Co. Ltd., Caxton House, London, for 20 shillings.

The authors of this book have attempted to give a better understanding of the reasons why some countries can develop merchant shipping, why some governments consider it necessary to give aid to their merchant marines, why shipping is by nature a poor paying business and the many questions concerning shipping as an industry as opposed to shipping as a career.

The authors who are intimately associated with the problems which confront ship owners and which have a national and international bearing on the economic welfare of the country have in this book set down their ideas on the subject. The viewpoint of the shipper should be covered in a book on the technique of exporting and the book under discussion is not of that kind. Its purpose is rather to give a better understanding of the workings and economics of the shipping industry. This volume is divided into three books. Book I has 9 chapters dealing with the shipping industry as for instance the Ocean Carrier; Liner and Tramp Services; How Cargo is Obtained; Steamship Conferences etc. Book II consists of 12 chapters among which are, Government Regulation of Shipping; Treaty Policies with Reference to Shipping and Government; Aid to Shipping in all of the principal maritime countries. Book III deals with the American shipping problem and consists of six chapters, some of which are, Brief History of American Shipping, The Shipping Board and Emergency Fleet Corp.; Shipping Less Profitable Under the American Flag; How Much Shipping Can We Support.

Consulting Engineer

Robert J. Piersol, formerly research engineer for the Westinghouse Electric & Mfg. Co. has changed to consulting engineer specializing on the installation and operation of chromium plating. His office is located at 3617 Dawson street, Pittsburgh, Pa. Mr. Piersol enters a field with much application in the marine industry as the resistance of chromium to salt spray is tending to replace nickel in marine equipment.

Gordon B. Houseman has resigned as manager of the Forest City Steamship Co. The office of the company is now located at 1750 Union Trust Bldg., Cleveland.

To Build New Steamers

The Iron Steam boat Co., which has for many years operated a famous line of iron paddle wheel steamers from Manhattan to Coney Island and other river and harbor resorts in and around New York, is considering plans for the construction of four new passenger steamboats to replace some of its present fleet. The ves-

sels of the fleet are the CEPHEUS, CETUS, CYGNUS, PEGASUS, PERSUS, SIRIUS and TAURUS all built at Cramps in Philadelphia in 1881.

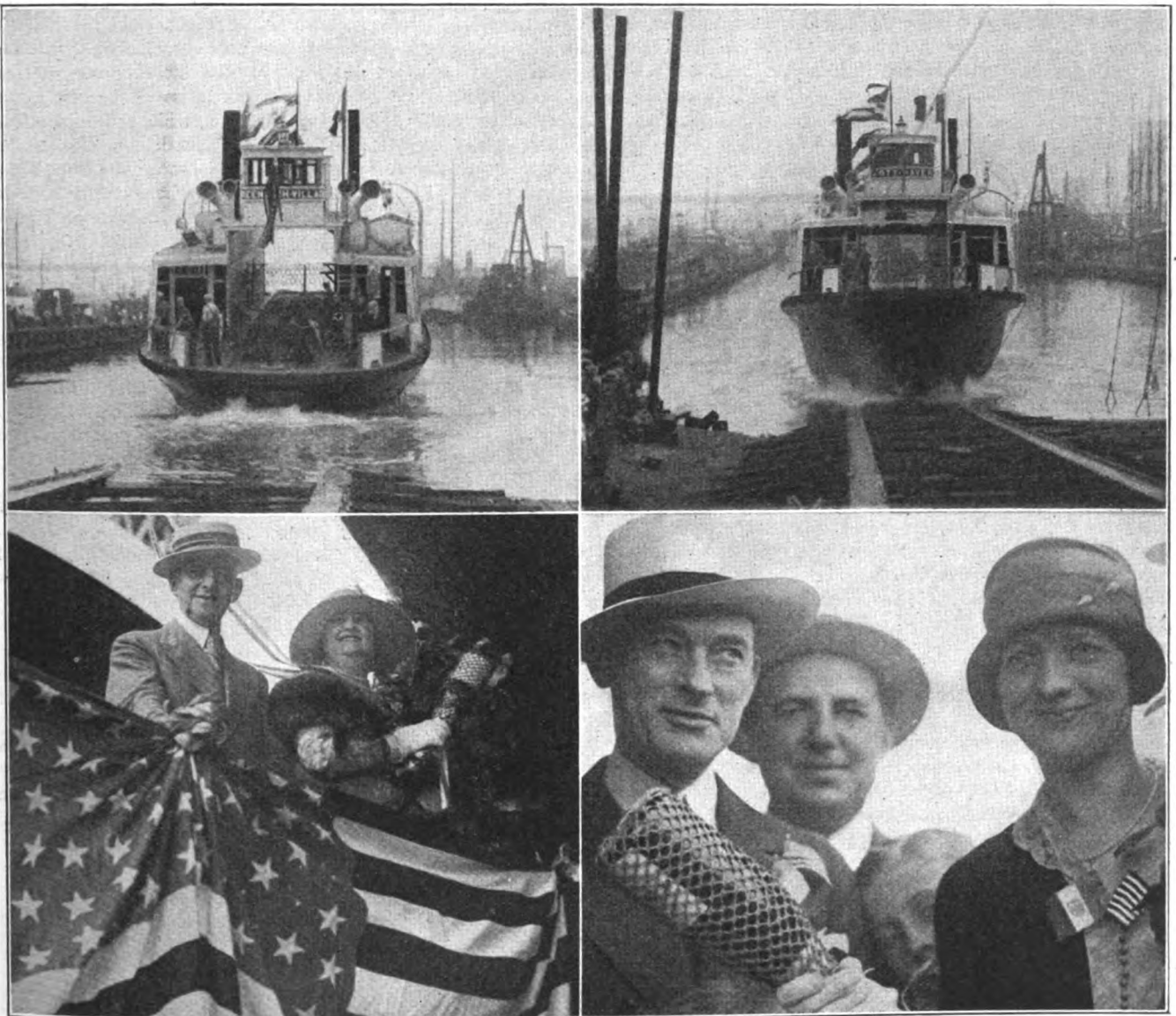
Order New Steamer

The Baltimore Steam Packet Co. has placed an order with the Pusey & Jones Corp. for a new steamer at a cost of about \$1,000,000 for its

service between Baltimore and Norfolk, carrying passengers and cargo.

The vessel will be largely a duplicate of the company's present vessels, the STATE OF MARYLAND and STATE OF VIRGINIA and will be 330 feet long overall, 58-foot beam over guards and 18 feet 6 inches deep. She will have a triple expansion engine driving a single propeller.

Launch Two New York Diesel Ferries



Launching of Two Ferries for the City of New York July 19 .Upper Left—Greenwich Village. Upper Right—Mott Haven. Lower Left—Mrs. Alfred E. Smith, Wife of New York's Governor and William H. Todd. Lower Right—Mrs. Joseph V. McKee, Wife of the President of the Board of Alderman and at Left James J. Walker, Mayor of New York

THE diesel engined ferries MOTT HAVEN and GREENWICH VILLAGE were launched July 19 at noon at the Tebo plant of the Todd Shipyards Corp., at the foot of Twenty-third street, Brooklyn, N. Y.

The first boat launched, the GREENWICH VILLAGE, was christened by Mrs. Alfred E. Smith, wife of the governor of New York.

The MOTT HAVEN, sponsored by Mrs. Joseph V. McKee, wife of the Borough President, followed down the ways twenty minutes later. These boats built for the City of New York are 101 feet long, 30 feet beam and 12 feet molded depth.

The christening of the new ferries was attended by a large group of city officials and officers of the various

yards of the Todd Shipyards Corp.

Among those attending were: Mayor and Mrs. James J. Walker, Borough President James Byrne, Hon. John H. McCooey, Hon. Joseph V. McKee, William H. Todd, Commissioner Goldman, Catherine Smith, Paul Bloch, J. Herbert Todd, William H. Smith, Joseph Haag, Jr. and William H. Raab.

What the British Are Doing

Short Surveys of Important Activities in Maritime
Centers of Island Empire

BRITISH shipbuilding returns for the second quarter reveal a falling off of about 25 per cent in the amount of new work begun as compared with the first three months of the year. The percentage of unemployment in the industry is about 22 and this is said to be the highest of any industry in Britain. These unfortunate facts were brought to light at a recent conference between employers and workpeople when the latter renewed a previous claim for 10 shillings increase in wages. The increase was refused on the ground that the depression in the industry did not justify any addition to the wages bill.

THE tonnage launched from Scottish shipyards during July totaled 21,364 tons as compared with 40,000 tons in June. Though the stoppage of work for the Fair holidays partly accounts for the steep drop the shortage of new orders is the main factor in the situation. Enquiries for new vessels are falling off, and the accumulations of orders following the industrial upheaval of 1926 have mostly been worked through. The aggregate of 120 vessels of 165,480 tons for the seven months compares with 92 of 171,449 tons in the corresponding period of last year, 137 of 334,386 tons in the first seven months of 1925, and 146 of 377,270 tons in the best corresponding period on record—that of 1913. The outlook is uncertain as there will be a slight increase in en-

gineering costs as the result of an advance of 2 shillings per week.

PRICES of new tonnage are still cut so fine that there is little or no margin for builders' profits. Contracts reported during July were:—David & William Henderson & Co. Ltd., Partick and Charles Connell & Co. Ltd., Scotstoun, each to build a cargo steamer of 9100 tons deadweight for T. & J. Harrison of Liverpool; A. M'Millan & Son Ltd., Dumbarton, a motorship of about 3700 tons deadweight for David MacIver & Co. Ltd., Liverpool; the Ailsa Shipbuilding Co. Ltd., Ayr, a single-crew coasting steamer for British owners; the Clyde Shipbuilding & Engineering Co. Ltd., Port Glasgow, a small coasting steamer for Australian owners; an upper-reach Clyde firm, a large oil tanker for one of the Furness-Withy companies; Alley & McLellan Ltd., Polmadie, two lighters, each 125 feet in length for unnamed owners; and the Caledon Shipbuilding & Engineering Co. Ltd., Dundee, two paddle steamers for the Southern Railway Co., London.

THE building of motor ships in Britain is showing a marked advance. Of the motor tonnage under construction throughout the world 43 per cent is now being built in British yards. The tonnage of oil-engined vessels under construction is three times as much as in any other country.

SIR FREDERICK W. LEWIS, bart., presided at the annual meeting of Furness, Withy & Co. Ltd., held in London July 27. The credit balance this year he said was £603,511, an increase of £80,467 over the amount of the previous year. Sir Frederick referred to the holding up of the building of six large twin-screw motor vessels for the United Kingdom-Pacific coast of North America trade, caused by the general strike and the coal dispute. When these vessels leave the yards the company's Pacific coast trade will be operated by nine fast motor ships fitted with refrigerated and cool air chambers for carriage of fruit etc. With the exception of the NEWFOUNDLAND and the NOVA SCOTIA, every new vessel laid down during the past two years has been a motor ship. He believed that the future of long-voyage trades lays in the development of motor ships.

THE first-class battleship RODNEY built by Cammell Laird & Co., Birkenhead for the British navy will leave the Mersey on Aug. 13 for docking at Portsmouth prior to her speed, gunnery, and other trials before returning to the Mersey for completion. The largest warship ever seen in the Mersey, the RODNEY has a length of 702 feet, a breadth of 106 feet, and her displacement is 35,000 tons on a mean draft of 30 feet. The propelling machinery, which has also been built at Birkenhead, consists of geared turbines with oil-fired boilers.

What's Doing Around The Lakes

INCLUDING Aug. 18, 92,029,000 bushels of grain delivered by water has been received at the port of Buffalo for the present season as compared with 74,768,000 bushels for the corresponding period last year, a gain for this season of 17,261,000 bushels. It is to be kept in mind however, that navigation opened earlier this year than in 1926 by at least a full month and consequently considerable grain was brought to Buffalo before the ore

was ready in large volumes. Grain first arrived at the Port of Buffalo in May 9, 1926 while this year the first cargo arrived on April 9.

MICHAEL LYNN of Port Huron died at the home of his daughter at Grand Rapids, Mich. Aug. 19. He was 66 years of age and had been in the vessel business more than 30 years. He operated the steamer LIZZIE MADDEN and two barges. He

leaves three brothers, George F. Lynn, fleet engineer for the Great Lakes Steamship Co. and Edward and Daniel Lynn both of Port Huron.

AT THE end of July the Lake Carriers' association increased the recommended draft for St. Mary's river to 19 feet 6 inches and for Lake St. Clair to 19 feet 9 inches, an increase of 3 inches in each case over the draft previously allowed.

THE self-unloading steamer **CARL D. BRADLEY** on her fifth trip with limestone from Calcite for Buffington, Ind. carried 15,205 long tons of stone. On her first trip she had a cargo of 14,627 tons, which was a record then.

TOWARD the end of July the American Shipbuilding Co., Cleveland, received a contract for a twin screw diesel motor driven bulk oil carrier of 3700 tons deadweight for service on the Great Lakes. The new tanker is to be built for the Roxana

Petroleum Corp. and will be 330 feet long between perpendiculars, 51 foot beam and 18 feet 6 inches deep. She will be built at the Lorain, O. yard and will be ready for service at the opening of navigation in 1928.

IT IS expected that the new steamer **B. F. AFFLECK** building at the yard of the Toledo Shipbuilding Co. for the Pittsburgh Steamship Co., will go into commission before the end of August.

With the addition of this vessel the Pittsburgh Steamship Co. will

have 31 steamers of the 600 foot class.

MOST of the grain being shipped from Fort William and Port Arthur is being carried in Canadian vessels. During the month of July these two ports shipped 12,766,314 bushels of grain carried by 72 vessels. Of this number 7 were American vessels taking 1,505,125 bushels to American ports, while 8 Canadian boats delivered cargoes at American ports and 57 Canadian vessels made deliveries at Canadian ports.

Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated

Quotations Corrected to Aug. 19, 1927 on Future Loadings

NOTE: FREIGHT RATES STEADY WITH BUT SLIGHT CHANGE

New York to	Grain	Provisions	Cotton (H. D.)	Flour	General cargo cu. ft.	100 lbs.	Finished steel	Freight Offered	REMARKS	From North Pacific Ports to	Lumber Per m. t.
Liverpool.....	2s 0d†	\$0.60	\$0.40	0.18	\$0.50	\$0.90	\$8.00T***	Poor		San Francisco.....	\$4.25 to 4.50
London.....	2s 0d†	0.60	0.40	0.18	0.50	0.90	8.00T***	Poor		South California.....	4.50
Oslo.....	\$0.18	0.45	0.50	0.30	0.42½	0.85	8.00T	Fair		Hawaiian Islands.....	9.00 to 10.00
Copenhagen...	0.12	0.45	0.50	0.30	0.50	1.00	8.00T	Fair		New Zealand.....	16.00 to 19.00
Hamburg.....	0.11	0.55	0.40	0.20	0.50	0.90	10.00T	Fair		Sydney.....	14.00 to 14.50
Bremen.....	0.11	0.35	0.40 to 65	0.18	0.50	0.90	10.00T	Fair		Melbourne-Adelaide.....	14.00 to 15.00
Rotterdam and Amsterdam....	0.10	0.32½	0.40	0.23	0.45	0.80	9.50T	Quiet		Oriental Ports.....	
Antwerp.....	0.07	0.32½	0.40	0.20	0.45	0.80	9.50T	Very poor		Oriental Ports (logs)....	15.00 to 16.00
Havre.....	0.10	0.55	0.50	0.30	0.45	0.80	9.00T	Very quiet		Peru-Chile.....	13.50 to 16.00
Bordeaux.....	0.10	0.55	0.50	0.30	0.45	0.80	9.00T	Very quiet		South Africa.....	20.00 to 24.00
Barcelona.....		0.50	0.30	10.00 bags	—12.00T—		10.00T	Quiet		Cuba.....	16.00 to 17.00
Lisbon.....		0.75	0.50	8.00T bags	—23.00T—		8.00T	Quiet		United Kingdom.....	80s to 95s
Marseilles.....		0.65	0.40	7.00 bags	—23.00T—		8.00T	Quiet		United Kingdom (ties)...	
Genoa.....	0.19	14.25	0.50	9.00	—23.00T—		11.50T	Fair		Baltimore-Boston range..	\$14.00 to 15.50
Naples.....	0.19	14.25	0.50	9.00	—23.00T—		11.50T	Fair		Florida Range.....	No rates
Constantinople.	0.27	20.00T	0.85	0.40½	—24.00T—		11.50T	Quiet		Buenos Aires.....	15.00 to 17.00
Alexandria.....		20.00T	0.85	0.40½	—24.00T—		11.50T	Quiet		North of Hatteras.....	
Algiers.....		0.85	0.60	0.45	—23.00T—		11.50T	Fair		China.....	10.50 to 11.00
Dakar.....		17.00		15.50T	—23.00T—		11.50T	Good		Japan.....	9.50 to 10.50
Capetown.....		18.00		13.00	20.00	13.00 to 18.00		Good			
Buenos Aires...		22.00T			20.00 to 22.00T†	8.00 to 8.80T		Poor		Flour and Wheat	
**Rio de Janeiro		22.00T			20.00 to 22.00T†	7.00 to 7.70T†		Poor		U. K. and Continent	
Pernambuco...		22.00T		9.00T	—22.00T—	9.70T†		Poor		(gross ton).....	33s 9d to 35s 0d
Havana.....	0.35*	0.50		0.35*	0.61	1.33	10.00	Light		Oriental Ports (net tons) ..	\$4.25 to 4.75
Vera Cruz.....	0.25	0.30	0.35	0.25	0.52½	1.05	0.30 to 0.35	Light			
Valparaiso.....		1.07		0.70			10.00T	Fair			
San Francisco...		0.35 to 0.70		0.40 to 1.10			0.25 to 0.30	Fair			
Sydney.....		18.00T	1.25	18.00T	18.00-24.00T	9.00 to 12.—T		Very good			
Calcutta.....				10.00T	—16.00T—	10.00T		Fair			

†—Ton. †Per quarter of 480 lbs. †Landed. ††Heavy products limited in length. *Extra charge for wharfage. **Plus \$0.50 surcharge on all rates to Rio de Janeiro on account of congestion. ***Plus 15 per cent.

Principal Rates To and From United Kingdom

	s	d		s	d
Grain, River Plate to United Kingdom..	23	0	Pig iron, United Kingdom to New York or Philadelphia.....	12	6
Coal, South Wales to Near East.....	9	0	Iron ore, Bilbao to Cardiff.....	6	9
Coal, United Kingdom to Buenos Aires..	13	0	Iron ore, Huelva to Phila. or Balto.....	11	6
Manganese Ore, Poti to Philadelphia...	\$3.75				

Bunker Prices

At New York			At Philadelphia			Other Ports		
Coal alongside per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon	Coal trim. in bunk per ton	Fuel oil alongside per barrel	Diesel Eng. oil alongside per gallon			
Oct. 22, 1926. 7.25@7.50	1.70½	5.86c	Oct. 22, 1926 7.25@7.50	1.74@1.80½	5.66@5.88c	Boston, coal, per ton....	\$7.03	
Nov. 19..... 7.00@7.50	1.81½	5.87	Nov. 19..... 7.00@7.50	1.80½@1.81	5.43@5.88	Boston, oil, f. a. s., per barrel.....	\$1.76	
Dec. 20..... 6.25@6.50	1.81	5.86	Dec. 20..... 5.50@5.75	1.80@1.90½	5.64@6.19	Hampton Roads, coal, per ton, f.o.b., piers \$4.35 to 4.50		
Jan. 19..... 5.90@6.15	1.81½	5.87	Jan. 19..... 6.20	1.95@1.95½	5.88@6.19	Aug. 9 — Cardiff, coal, per ton.....	14s 0d	
Feb. 18..... 5.25@5.50	1.81½	5.95	Feb. 18..... 5.24@5.50	1.90@1.91	5.64@6.13	London, coal, per ton.....	—s—d	
Mar. 18..... 5.25@5.50	1.81½	5.95	Mar. 18..... 5.24@5.50	1.95@1.95½	5.38@5.88	Antwerp, coal, per ton.....	21s 6d	
Apr. 19..... 5@5.50	1.75	5.71	Apr. 19..... 5.15@5.65	1.81@1.86	5.38@5.64	Antwerp, Fuel oil, per ton 80s 0d		
May 19..... 5.65	1.81½	5.63	May 19..... 5.15@5.65	1.75½@1.76	5.14@5.38	Antwerp, Diesel oil, per ton.....	95s 0d	
June 18..... 5.50	1.71½	5.39	June 18..... 5.00@5.25	1.70	5.12@5.14	British ports, Fuel oil...80s 0d		
July 19..... 5.65	1.65	5.24	July 19..... 5.00@5.25	1.65@1.70	5.10@5.12	British ports, Diesel oil...95s 0d		
Aug. 19 1927. 5.50	1.71½	5.15	Aug. 19, 1927. 5.25	1.70@1.71	5.12@5.14			

MARINE REVIEW—September, 1927

Personal Sketches of Marine Men

John L. Crone, Appointed Supervising Steamboat Inspector, Second District

By E. C. Kreutzberg

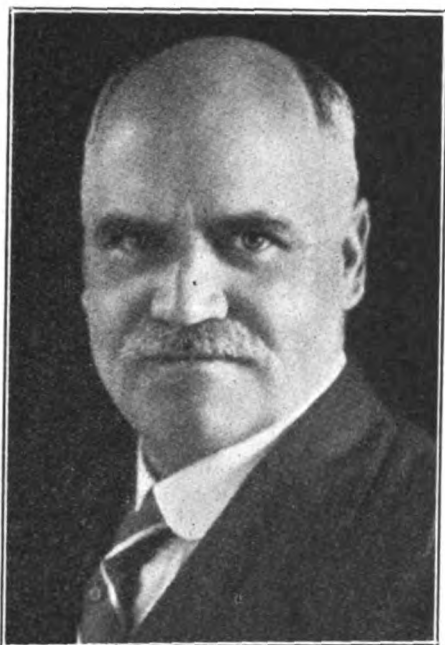


Photo by Blank-Stoller Inc

ABLE and faithful service to the government over a period of nearly 30 years was given deserved recognition in his appointment as head of the most important district.

OVER one-third of all vessels under jurisdiction of the service come within the second district. His new post is therefore next in responsibility to that of supervising general.

HE HAS a thorough first hand knowledge of boilers, machinery and hull structures of all types of ships. His decisions will reflect a trained and mature judgment.

JOHN LINCOLN CRONE, newly appointed supervising inspector in the second district steamboat inspection service, is a serious and conscientious man, fully appreciating the importance of his task. "The inspection of vessels is an exacting job," says Mr. Crone. "We are charged with seeing that the ships, their crews and equipment are such as to make it safe for the public to travel by water."

In describing Mr. Crone's duties, it may be stated that the steamboat inspection service originated in an act of congress approved in 1838. The present service was established by another act of congress approved in 1852. The 11 supervising inspectors in this service together with the supervising inspector general hold meetings at regular intervals and discuss and change the inspection code of the country as they deem advisable. They enjoy authority of a quasi-legislative character not delegated to any other body in this country. The supervising inspectors, at their meetings, formulate regulations covering all phases of the general subject of making ships safe. These regulations, when approved by the secretary of the department of commerce, automatically have the force of law.

Mr. Crone's district is by far the most important in the country. Scattered throughout the United States are 46 local inspection boards. In the year ended June 30, 1926, these boards inspected 7377 vessels having a total of 15,016,566 gross tons. Of this total, Mr. Crone's district handled 2515 vessels with a gross tonnage of 6,238,780. His district includes New York, New Haven, Albany and Philadelphia. During the year mentioned, New York alone inspected 1896 ships of 5,553,283 gross tons,

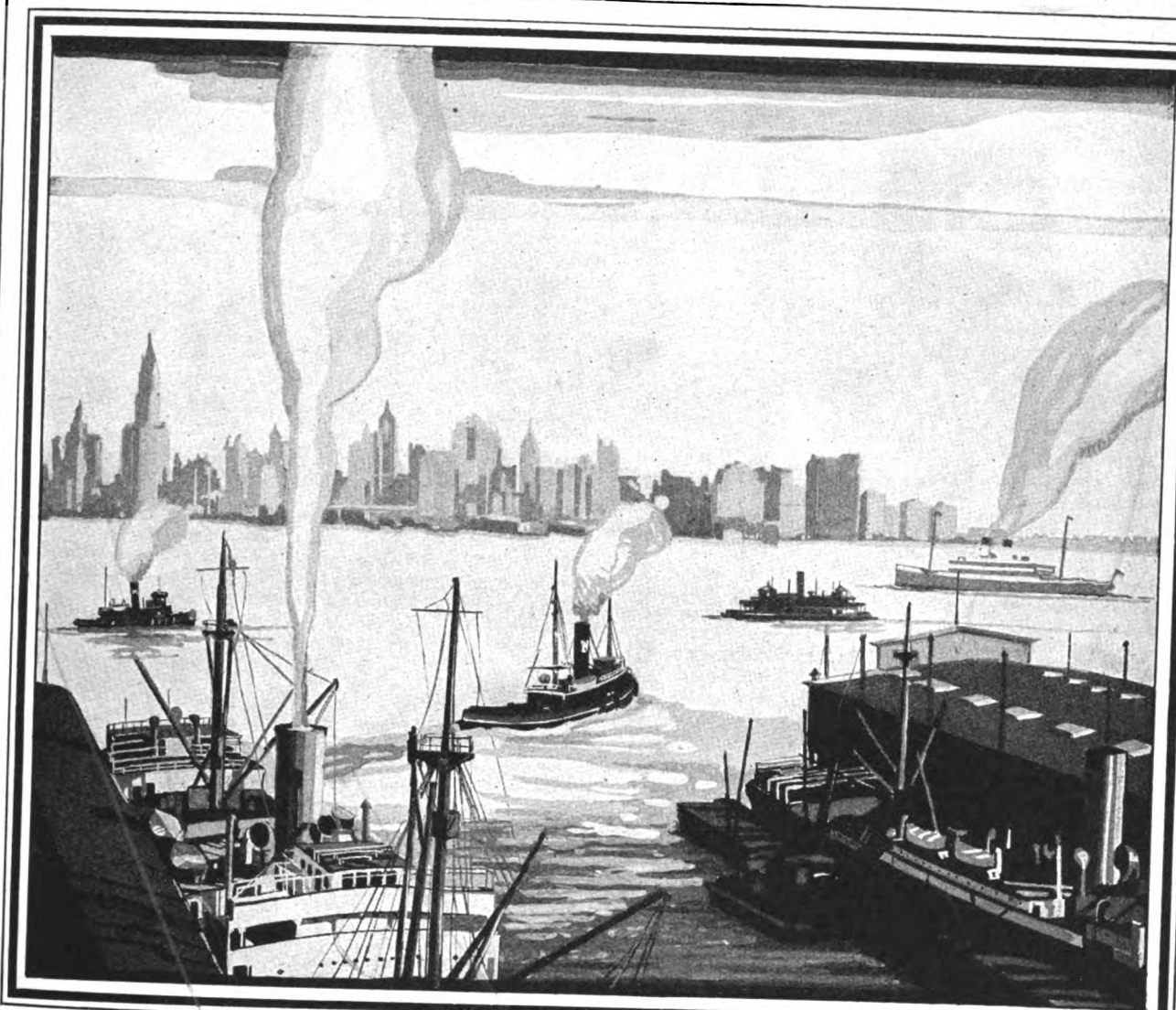
Philadelphia 410 with 626,143 gross tons, Albany 142 with 52,538 gross tons and New Haven 67 with 6816 gross tons. Mr. Crone's staff comprises two local inspectors and 32 assistant inspectors at New York, two locals and 14 assistants at Philadelphia, two local inspectors and two assistants at Albany and two local inspectors at New Haven.

Responsibilities delegated to Mr. Crone as supervising inspector cover the inspection of vessels of American registry which are in the second district, and of all foreign ships carrying passengers from the United States which call at these ports. The inspection embraces the vessels, their machinery, boilers and other equipment, such as life-saving and fire-fighting apparatus. Certificates of inspection are issued to cover a period of one year. In some cases there are inspections every month during the period of service, in others every three months and in some once a year.

An important feature is the licensing of officers. Examinations are conducted to determine the qualifications of the applicants. In cases of misconduct, negligence, inattention to duties, or violation of laws on the part of licensed officers, the service holds a trial, the local inspector of hulls and the local inspector of boilers together sitting as a board for this purpose. From the decision of this board there may be an appeal to the supervising inspector and from the latter there may be an appeal to the supervising inspector general at Washington. The same procedure is followed in investigating collisions or other accidents, and in investigating violations of the law.

In the year ending June 30, 1926, the inspection board

OVER 65 YEARS IN SERVICE IN NEW YORK HARBOUR



The Heavy Traffic of New York Harbour

MORAN Service activities constantly dot the waters of New York Harbour with the various tasks undertaken in the interests of the most representative marine and industrial groups.

Here a transatlantic steamship to be berthed snugly and safely in its first port of call. There a coastwise towing operation arriving on scheduled time. Again a marine transportation job for the City government.

And so on, through the many and varied activities that go to make up the industrial marine life of that vast network of converging rivers, bays and ocean inlets that is the Port of New York.

Moran Service has functioned continuously through three generations—responsibly,—successfully and economically—and its Marine Transportation Engineers are gratuitously at the service of owners and operators for consultation and advice at any time.

MORAN TOWING & TRANSPORTATION CO., INCORPORATED
17 BATTERY PLACE, NEW YORK
Whitehall 1240

MORAN Service



MARINE REVIEW—September, 1927

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at New York held a total of 206 investigations and trials. It is interesting to note that as a result of these cases, the licenses of 59 officers were suspended, and two licenses were revoked. It also is of interest to note that the inspection board at New York during the year granted 5140 officers' licenses. During that time applications for licenses were refused in four cases.

Revocations and suspensions of licenses now generally result from negligence or lack of skill or misconduct of some kind, says Mr. Crone.

Mr. Crone was born in a little town near Toronto, Canada, in 1864, the son of a contractor. He was educated in the public schools of Toronto and went to business college there. At the age of 17 he became a machinist's apprentice and spent a few years at this trade. Then he shipped as an oiler on a lake steamer. He passed through the grades of second and first assis-

tant engineers and at 24 was licensed as a chief engineer. In 1891 Mr. Crone went to New York as superintending engineer of the marine division of the New York Central railroad.

His first connection with the government began in 1898 when he was appointed assistant inspector of boilers in the steamboat inspection service at New York. In 1901 he was made local inspector of boilers at Portland, Me. In 1903 he returned to New York in his former capacity there. In 1907 he was appointed local inspector of boilers at the port of New York. On July 9, 1927, he was appointed supervising inspector in the second district, succeeding the late Capt. H. M. Seeley, who died in May, after having held the office since 1911. Mr. Crone has his headquarters in the custom house at New York. He makes his residence in Newark, N. J.

Safety Council Meets at Chicago, Sept. 26-30

AT THE sixteenth annual congress of the National Safety council to be held at the New Stevens hotel, Chicago, Sept. 26-30 inclusive, the marine section is destined to play an important part, according to the contemplated program which has been issued.

The importance of accident prevention work in the maritime industry is daily gaining added force which is attested to by the steadily increasing number of steamship companies and shipyards who are vigorously prosecuting accident prevention work on their vessels and at their wharves and terminals. One hundred and twenty members are now enrolled with the marine section.

A large number of prominent shipping men have already signified their intention of attending the Chicago congress to discuss ways and means of reducing maritime accidents, to exchange ideas regarding accident prevention work, and to make new plans for the coming year. The value of the work of the marine section can not be over-estimated. The coming safety congress should therefore, be attended by representatives of standing of the various steamship owners and operators whether members or non-members. The point is that the work of this committee is of the utmost importance to everyone responsible for any of the many varied activities of the marine industry from operating ships and repairing them to discharging and loading them.

The officers of the marine section are: Chairman, Capt. Wm. P. Kain, manager, American Steamship Owners' Mutual P. & I. association, New York City; first vice chairman, C. H. Potter, president, Potter Transportation Co., New York City; second vice chairman, Robert F. Hand, assistant manager, marine department, Standard Oil Co. of New Jersey, New York City; third vice chairman, Capt. R. C. Brennan, operating manager, Pacific Steamship Co., Seattle, Wash.; fourth vice chairman, F. P. Foisie, industrial relations manager, Waterfront Employers' association, Seattle, Wash.; secretary, A. R. Bush, safety supervisor, The Barber Asphalt Co., Maurer, N. J.

The contemplated program including papers to be delivered follows:

TUESDAY MORNING, SEPT. 27

1. *Reports of Officers and Committees.*
2. *"The Maritime Safety Movement and Its Relation to America's Merchant Marine Problem"* by Norman F. Titus, chief, Transportation Division, Bureau of Foreign & Domestic Commerce, United States Department of Commerce, Washington, D. C.
3. *"Marine Statistics and Their Relation to Seamen's Compensation"* by Capt. Irving L. Evans, U. S. P. & I. Agency, Inc., New York City.
4. *"The Benefits from Physical Examinations of Seamen"* by Robt. F. Hand, assistant manager, marine department, Standard Oil Co. of N. J., New York City.
5. *"Building Safety Into Ships"* by H. E. Parker, Fore River Plant, Bethlehem Shipbuilding Corp., Quincy, Mass.
6. *"Ships—Personal Injuries"* by Milton D. McIntyre, Pickands, Mather & Co., Cleveland, O.

WEDNESDAY MORNING, SEPT. 28

1. *Election of Officers.*
2. *"Observations on Safety Precautions Aboard Tank Steamships"* by A. M. Tode, superintendent, technical division, marine department, The Texas Co., New York City.
3. *"Safety and Production in Port Cargo Handling"* by F. P. Foisie, Waterfront Employers' association, Seattle, Wash.
4. *"The American Marine Standards Committee—The Relation of Its Work to Accident Prevention"* by Col. Edward A. Simmons, American Marine Standards Committee, New York City.
5. *"Health Conditions Among Seafaring Men"* by R. F. Edwards, The Prudential Insurance Co., Newark, N. J.

THURSDAY MORNING, SEPT. 29

1. *"Safety Education in State Nautical Schools"* by Charles Williamson, secretary, New York State Nautical School, New York City.
2. *"Life and Property Conservation in Railroad Marine Operations"* by O. D. Moore, supervisor, marine section, insurance department, Pennsylvania Railroad Co., Philadelphia, Pa.
3. *"Radio's Contribution to Safety at Sea"* by Geo. E. Cole, Superintendent, Radio Corporation of America-Ohio Co., Cleveland, O.

Tanker Is Launched

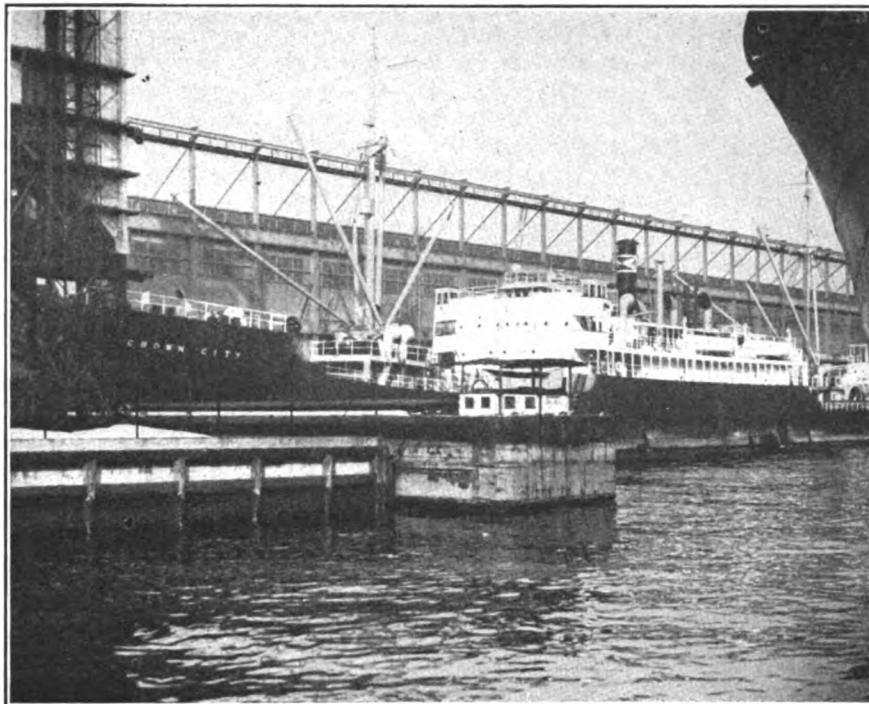
The steam tanker AXTELL J. BYLES building for the Tide Water Associated Oil Co. at the Sun Shipbuilding & Drydock Co., Chester, Pa. was successfully launched Aug. 10. The new tanker was christened

by Mrs. Axtell J. Byles, wife of the president of the company. A luncheon was tendered to the launching party, by the shipyard, at the Chester Valley Country club.

With the completion of this vessel the present marine construc-

tion program of the Tide Water company will be completed. The new tanker is of the straight shelter deck type and is powered with a 4000-horsepower quadruple expansion engine. She has a capacity of 90,000 barrels of oil and has a deadweight of 13,000 tons.

U. S. SHIPPING BOARD
M. V. "CROWN CITY"
Operated by
ROOSEVELT STEAM-
SHIP COMPANY



"CROWN CITY" MAKES GREAT RECORD ON 25,641 MILE TRIP

Lubricated with **TEXACO URSA OIL** for Diesel engines

"Not One Penny for Engine Repairs"

The recently converted "Crown City", of the U. S. Shipping Board, has *again* demonstrated the remarkable lubricating efficiency of **TEXACO URSA OIL** for Diesel engine lubrication.

This ship has just completed its maiden trip as a motor vessel: A 25,641 mile round trip voyage, with the longest stretch without stop (Panama to Brisbane) 7,719 miles.

Average for the 7,719 miles 11.5 knots per hr.
Average for round trip of 25,641 miles, 10.7 knots per hr.

The "Crown City" is driven by a 3,000 H. P. McIntosh & Seymour Single acting 4 cycle air injection Diesel engine, lubricated as follows:

CYLINDERS	TEXACO URSA OIL HEAVY
AIR COMPRESSORS	TEXACO URSA OIL
BASE LUBRICATION	TEXACO ALGOL OIL

(Texaco Algol oil has the same characteristics as URSA—only lighter in body.)

TEXACO URSA Oil is a clear, clean, pale colored oil; and, as this performance demonstrates, it has the proper viscosity for work.

As it has an exceptionally low pour test it will not clog oil pipes, even when exposed to low temperatures.

It clings to the surfaces of cylinder walls and piston rings—maintains compression, enabling easy starting and delivery of **FULL POWER.**

Ask to see a sample of **TEXACO URSA OIL**—the oil that was used on a 25,641 mile round trip "without one penny for engine repairs".

STOCKS KEPT AT PORTS THROUGHOUT THE WORLD.



THE TEXAS COMPANY

Dept. K9

Texaco Petroleum Products

17 Battery Place, New York City

Offices in Principal Cities



Aids to Navigation

(Continued from Page 36)

effected between the two compass cards when the two circuits are again balanced, the ring travels over a succession of contacts by which electrical impulses are transmitted to one or more step by step motors that actuate the dial or dials of a corresponding number of repeater compasses. In this manner the repeaters are made to register in harmony with the magnetic master compass. If for any reason the follow-up ring system is out of service the magnetic standard compass would still be left unimpaired to serve its intended purpose as the prime navigational aid.

The magnetic master compass actuates a repeater compass card on the path and position indicator. It is by this repeater card that the course is set from any point of departure. When that course is set the hand on a dial immediately below the compass will point at zero. This hand carries a white star to make its movement

more readily observable by the man at the wheel; and the shifting of this hand at once warns the steersman that he is to the right or to the left of the set course, the dial scale reading to three decimals of a mile. To bring the ship back on the set course—not parallel with it—the man at the wheel must steer the vessel so that the star hand shall be at zero and so that the hand above the instruments compass card shall be in line with the prescribed point. The path and position indicator it is intended will do away with guessing on the part of the steersman and will give him a positive guide by which he can bring the ship back upon the set course after her head has been swung to the right or to the left of that course by yawing or by careless steering.

Can Determine Position Accurately

Two other dials are provided on the front of the path and position indicator. One of these registers the distance made good in relation to the set course and the other registers the amount of departure at any time from

that course. The readings are based on the speed of one knot, and to make them applicable to a given ship it is necessary only to multiply them by the known speed of the vessel as determined by her log or revolution counter. With the two sides of the triangle thus obtained it is an easy matter to ascertain the ship's position so far as that position is the result of steering.

The path and position indicator is used as a steering instrument instead of the time honored steering compass alone, and is placed in front of the man at the wheel. The magnetic master compass on the other hand can be mounted wherever is most convenient for navigational purposes and where it will be farthest removed from local disturbing influences; and when so situated it can be used to control the compass dial of the path and position indicator as well as the dials of any desired number of repeater compasses. Dead reckoning may be counted on with greater safety by using these instruments.

Streamline Rudder Adapted for Ships

By W. Braat

A STREAMLINE rudder known as the Oertz rudder from the name of its German inventor has been introduced to the shipping world, and in countries like Holland, Germany and France has already received wide recognition as an important improvement in shipbuilding. It has been applied, or ordered, for 175 steamers, aggregating a total tonnage of more than 900,000 deadweight, within the period of slightly over two years since it was first proposed as a practical feature.

The principle on which the construction is based has been derived entirely from the experience gained in aviation, that a comparatively thick wing profile gives the best proportion between lifting power and resistance in a longitudinal direction. When applied to the rudder of a ship this means the greatest possible steering effect with the smallest possible resistance. In order to retain this favorable wing profile, also at

extreme angles of helm, Doctor Oertz, the inventor, has made the rudder in two parts, of which the parabolically rounded forepart is constructed as a fixed guide body around the existing rudder post, or in new building completely replacing the old rudder post; whereas the afterpart of the rudder, the actual turning part, joins the fixed forepart in a complete streamline form.

The turning axis of the movable back part lies at about 1/3 of the total fore and aft width; consequently, a distribution of pressure is obtained resulting in a favorable turning moment, so that only 50 to 70 per cent of the steering power needed for a normal plate rudder of the same dimensions, is required. Through this construction in two parts, not only the ideal streamline profile is retained at every angle of helm but also, as the fixed parabolically rounded forepart always takes up the propeller stream in the center line of the ship, the propeller stream is so completely levelled that behind the ship is seen a very quiet wake, without whirlpools,

which means a considerable decrease of resistance and a consequent increase in the speed of the ship.

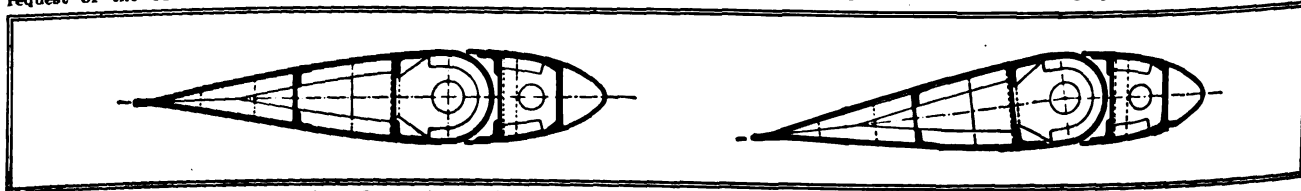
Another feature of this two-part rudder construction is the fact that the ship is held continually steady in its course. In consequence of this, the yawing of the ship, which has such a detrimental influence on the speed, is almost completely overcome.

Reports from masters of ships which have been equipped with this rudder, make mention not only of a considerable improvement in the maneuverability of the ship but also of the ability of the rudder to keep a straight course thus practically eliminating yawing. As an additional consequence of the ability to maintain a straight course, an increase of speed is noted in these reports.

The simple and strong construction of the Oertz rudder makes it reliable, its true streamline form and consequently easy flow of the water by the rudder reduces the chance of damage from floating obstructions like ice, lumber, etc.

The saving possible in the use of

This article was prepared by Mr. Braat, president of the Oertz Streamline Rudder Corp., 75 West street, New York City, at the request of the editor.

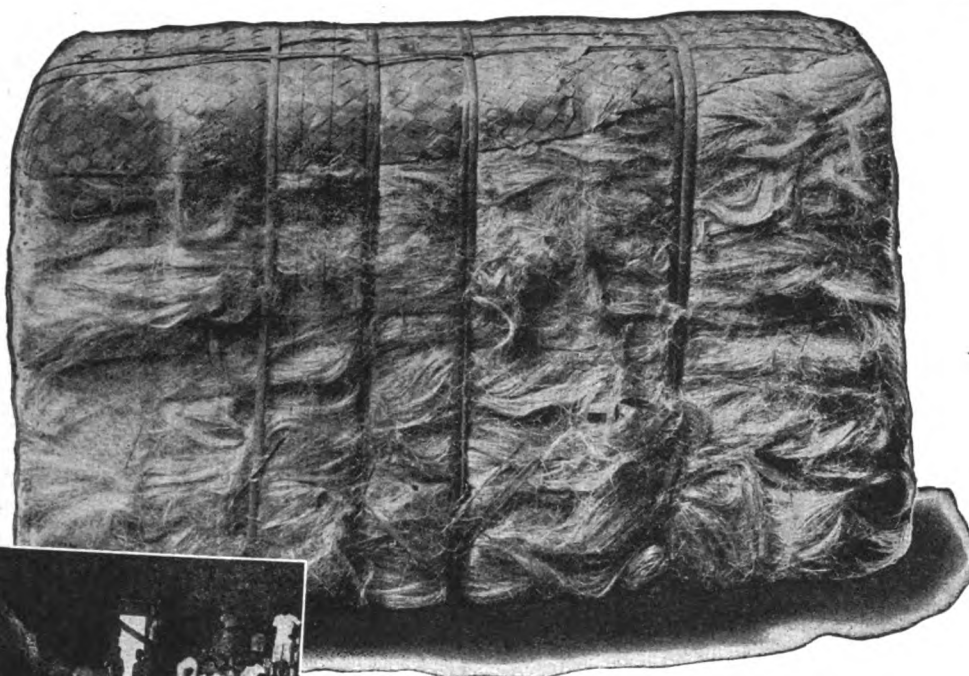


Horizontal Section—Oertz Streamline Rudder. At Left—Helm Midships. At Right—Helm Slightly to Port

Plain Facts About Columbian Rope

MARINE SERIES

NUMBER FOUR



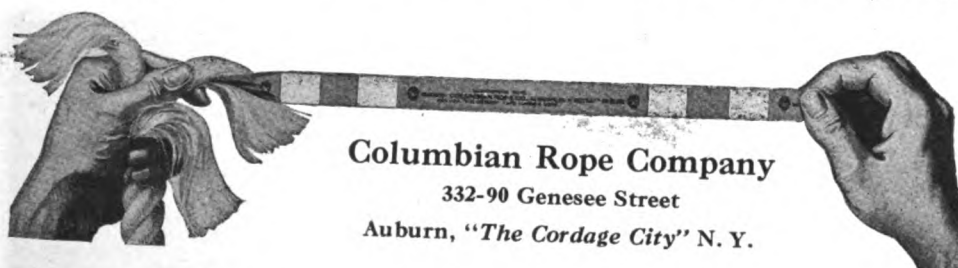
Our Own Purchasing Organization in the Philippine Islands.

The Columbian Rope Company is the only cordage manufactory maintaining its own purchasing organization and fibre warehouse in the Philippine Islands. This is another plain fact exclusive to Columbian which means a great deal to the rope user.

Located as it is in the heart of the best fibre producing province on the Islands, the Columbian Warehouse contains the pick of the fibre, specially selected for Columbian Products by our own fibre buyers. It therefore means that

Columbian Tape-Marked Pure Manila Rope "The Guaranteed Rope"

is a quality product from the start. From the Philippine warehouse, this excellent fibre is shipped direct to Auburn, N. Y., where in the world's most modern cordage mill it is made into the famous Columbian Tape-Marked Pure Manila Rope, which is so tangibly guaranteed by the manufacturer.



Columbian Rope Company

332-90 Genesee Street

Auburn, "The Cordage City" N. Y.

Branches:

New York

Chicago

Boston

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MARINE REVIEW—September, 1927

the streamline rudder may be realized in either one of two ways. If a ship owner is satisfied with the present speed of a vessel, he can maintain this speed and realize a reduction in horsepower ranging from 8 to 16 per cent and under certain conditions more and still maintain the same speed as with the plate rudder. Vibration in the stern of vessels, it seems, is almost completely eliminated by the use of this type of rudder.

The rudder can be applied to single screw as well as to multiple screws vessels, as demonstrated recently when the North German Lloyd decided to have its new liner BREMEN, which is to be propelled by four screws, equipped with a streamline

rudder. The conversion of ordinary plate rudder into this new type can readily be made at comparatively low cost on any existing single screw ship and on a number of existing multiple screw ships as it does not involve any radical changes in the structure of the stern frame or rudder stock and arms. It is usually more economical to take advantage of the ship's docking for other repairs, to install the rudder, which can be made ready to fit before the ship docks. It usually requires from 3 to 5 days, frequently not over 4 days, to complete the installation.

On new building, application of the streamline rudder may cost less than the standard rudder, if steering power,

which is from 30 to 50 per cent less, is taken into account.

Leading steamship operators abroad, such as the Hamburg America line, North German Lloyd, Woerman and German East Africa line of Hamburg, Nederland Steamship Co. of Amsterdam, Rotterdam Lloyd Steamship Co. and Van Ommeren Shipping Co. of Rotterdam, now have from 6 to 13 vessels for each company equipped with the Oertz rudder while in this country the Standard Oil Co. of New Jersey has an installation on the S. S. H. M. FLAGLER. All details in connection with the application of the Oertz rudder in the United States are handled by the Oertz Streamline Rudder corp., 75 West street, New York City.

Newest Self Unloader Delivers First Cargo

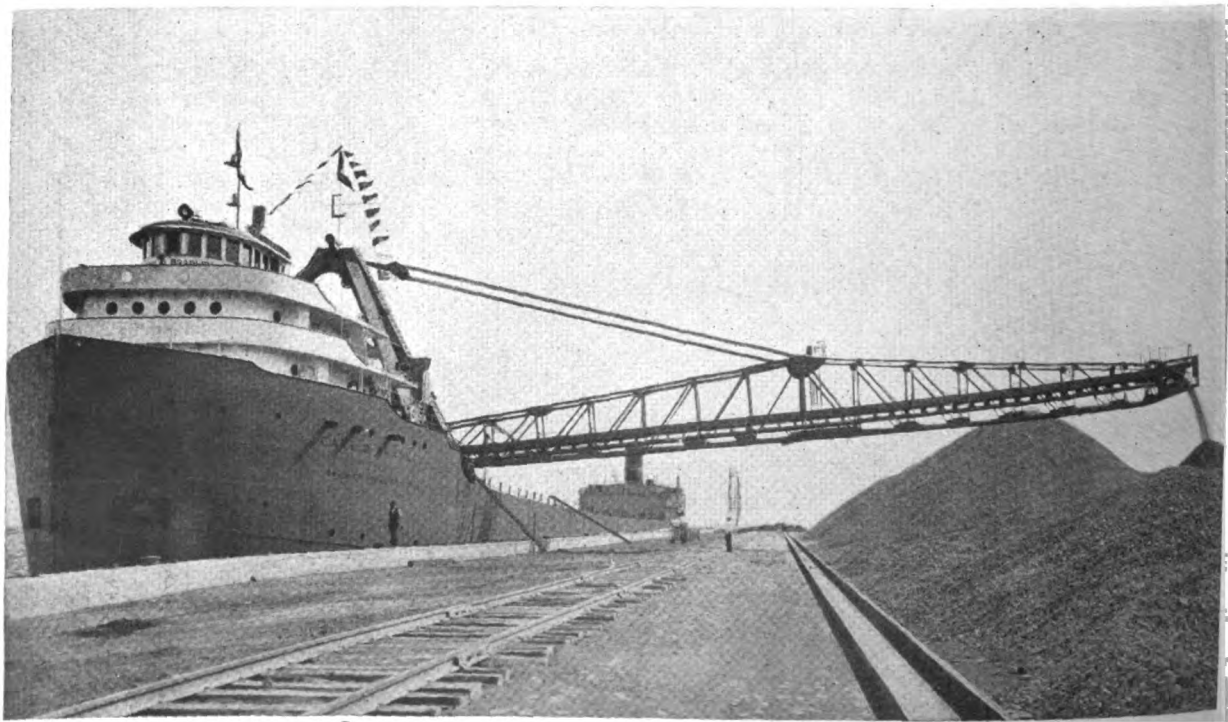
THE biggest boat that ever sailed the great Lakes bearing the largest cargo ever carried on the lakes completed her maiden trip July 30, when the steamer, CARL D. BRADLEY, nosed her way into the new Buffington harbor, Indiana, which recently was dedicated by Vice President Charles G. Dawes. Immediately upon her arrival the new boat began with her own automatic electrical machinery to dis-

charge her own 15,000-ton load of limestone at the rate of a ton a second.

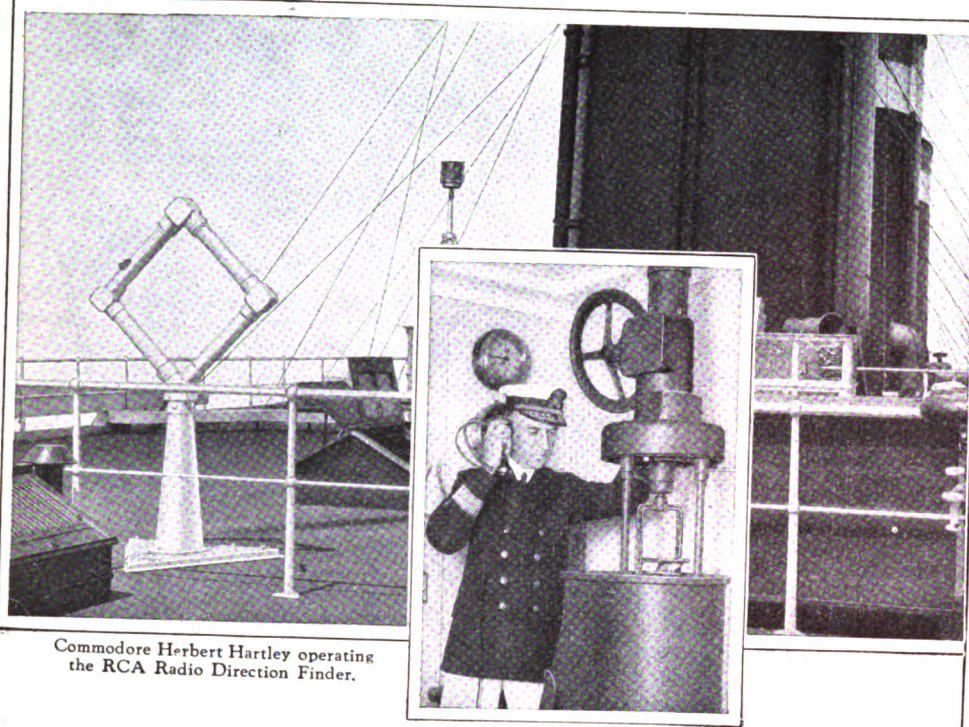
Six hundred and thirty-eight feet long, 65 feet wide, 33 feet deep and costing over a million dollars, the new steel freighter was built specially to carry limestone from the world's largest quarries at Calcite, Mich., to Buffington harbor at the Chicago plant of the Universal Portland Cement Co.

Carl D. Bradley, president

of the Michigan Limestone and Chemical Co. and of the Bradley Transportation Co., for whom the new boat is named, is credited with developing the modern self-unloading type of freighter of which this is the latest example. At the dock when the vessel arrived was a group of officials from Chicago headed by B. F. Affleck, president of the cement company which built and owns the harbor.



View of the deck above the chart room on the S. S. Leviathan, flagship of the U. S. Lines, showing enclosed loop of the RCA Radio Direction Finder.



Commodore Herbert Hartley operating the RCA Radio Direction Finder.

Commodore Hartley praises RCA Radio Direction Finder

"We have found the RCA Radio Direction Finder to be accurate and satisfactory in every way"

(signed) *Herbert Hartley*

RCA Radio Direction Finders have been installed on the vessels of forty-one steamship companies and four U. S. Government departments operating vessels on the Atlantic, Pacific, the Great Lakes and the Gulf. The captains of these vessels all agree that the RCA Radio Direction Finder is as accurate in fog or storm as sight bearings on clearest days. Its durability and performance are guaranteed by RCA.

We will be glad to take up with you in detail just how the RCA Radio Direction Finder will afford your ships greater safety and speed up running schedules between ports.

Baltimore
Washington, D. C.
Chicago

Boston
New Orleans
Norfolk, Va.

RCA

Philadelphia
San Francisco
Los Angeles

Cleveland
Seattle
Galveston
Honolulu, T. H.

MARINE RADIO

RADIO CORPORATION OF AMERICA ~ Marine Department ~ 66 Broad St., N. Y. C.

Sixteen distinctive features of the RCA Radio Direction Finder:

1. Eight-tube Super-Heterodyne receiver, using UX-201-A tubes, giving maximum sensitivity and selectivity.
2. Enclosed loop. Loop enclosure and support constructed entirely of non-corrosive silicon aluminum.
3. Wires in loop are shielded by metal covering from the effects of stacks, stays, masts and other metal objects. This improves accuracy in readings.
4. Mechanical compensator. Permits direct readings without reference to calibration chart or correction curve.
5. Reading glass magnifies scale on the compass card, enabling bearings to be read with greater speed and accuracy.
6. Exide battery, which is automatically trickle-charged when receiver is not in use. The only attention required is the addition of water about once in six months.
7. Compass card engraved with both degrees and points of the compass. Illuminated by electric light at night.
8. Automatic signal to radio room to notify operator to open antenna switch, and positive inter-lock between opening of antenna switch and direction finder through a relay in the direction finder filament circuit. This device assures accuracy.
9. Special balancing device permits readings which fall to absolute zero within one degree, so that even an unskilled person can read bearings with accuracy.
10. Vertical hand wheel in the chart room operates loop easily—even during a heavy gale or violent pitching and rolling of the ship.
11. Ball-bearings are used throughout on the loop drive shaft and control wheel.
12. Highest quality materials and workmanship throughout give the instrument a fine appearance and assure long life and minimum maintenance.
13. Variable sensitivity permits bearings on distant stations or nearby stations as desired.
14. Bearings may be read over a dumb compass or Sperry Repeater. These units are interchangeable.
15. Receiver controls mounted on a slanting panel afford easy manipulation of the receiver. The control panel is illuminated for night use. Station selector dials are calibrated in meters so that the operator can turn quickly and accurately to the wave length desired. Receiver control panel is provided with a cover equipped with a lock so that the entire instrument, including the receiver controls, can be locked to prevent tampering by unauthorized persons. Closing the receiver cover automatically turns off the tube filaments and puts battery on trickle charge. This is another means of assuring that the battery will be fully charged at all times.
16. The RCA Radio Direction Finder is backed by the name and reputation of the Radio Corporation of America—your assurance of the finest instrument obtainable.

Liner for Bermuda Run

(Continued from Page 30)

Another striking feature of the passenger service is the provision of an extensive modern steam and electric laundry, which occupies a considerable area on the upper, main and lower decks at the stern of the vessel.

The vessel has been built to comply with the latest requirements of the British board of trade, United States regulations, and Lloyd's Register. There are nine watertight bulkheads, extending to the main deck, the watertight doors being fitted with hydraulic arrangements for rapid closing, and operated from the bridge.

An hydraulically operated steering gear is fitted aft, and to provide power for emergency purposes and for use in port when the generators in the auxiliary engine room, fitted in connection with the main machinery, may not be working there are two large diesel driven generators fitted in a separate engine room aft well above the waterline.

Life boat accommodation is provided for all on board, and in addition a large number of life rafts are placed conveniently on the boat deck. The boats are exceptionally large, and accommodate about 86 passengers each. They are carried in patent davits of the gravity type, which ensures speedy and safe lowering ready for embarking passengers. A large motor boat, fitted with searchlight and wireless is provided for passenger use, and no doubt this will prove extremely useful at the various ports touched on in world cruising.

Hull Built to Highest Class

Cargo arrangements are somewhat unique. There are insulated and refrigerated chambers for the carriage of chilled meat, similar chambers for the carriage of fruit and vegetable produce, all as cargo, and also 'tween deck and hold space for general cargo, part of which is arranged for the carriage of motor cars. Another cargo carried will be fresh water for delivery to the company's hotel in Bermuda, and special pumping arrangements are provided in connection with this.

In view of the world cruising arrangements, special requirements have to be met in the provision of fuel bunkers, and a considerable space in the vessel has been allocated for the carriage of oil fuel.

In addition to the cargo carrying arrangements extensive refrigerated storerooms and bulk storerooms, baggage spaces and mail rooms have been provided.

There is an extensive telephone service between various members of the executive staff and pantries and service pantries; also a system of communication tubes for handling dockets etc., between the bureau, wireless office, kitchen and service pantries.

Complete Radio Equipment

An elaborate equipment of broadcasting apparatus has been provided, including four microphones, 24 loud speakers of latest type and a broadcasting receiver, and it is intended that programs "on the air" may be listened to by voyagers in the public rooms on the promenade decks, also in the private suites, and this not alone in the first class for similar arrangements are made for the second class. The music of the ship's orchestra also can be broadcast through the vessel by the same ingenious apparatus which includes further for the broadcast transmission of gramophone music.

When completed the BERMUDA will be one of the most luxurious and completely fitted vessels in any passenger service. The whole of the work in the vessel has so far been and will continue to be carried out under the supervision of the naval architects and consulting engineers Messrs. Esplen, Son & Swainston, Messrs. Gardner, decorative architects of Glasgow, and the owners' representatives.

Appointed West Coast Sperry Representative

The Sperry Gyroscope Co. has announced that its San Francisco representative, J. F. McConkey, has been appointed West Coast representative. In the past the activities of each of the company's offices at San Francisco, Seattle and Los Angeles, have been supervised directly from New York but under this new arrangement, Mr. McConkey will have charge of all of the Sperry company's interests on the West Coast.

Mr. McConkey was formerly a member of the New York service staff and was assigned to Seattle in 1922. About a year later he was placed in charge of the San Francisco office.

The two masted schooner MARY ELIZABETH under command of Capt. Henry Rose arrived in Narragansett bay late in July after having made a 40-day voyage of 3600 nautical miles from Brava, Cape Verde Island without having made a single change in her full spread of canvass. A run of 180 miles was made on the first day out from Brava.

July Lake Levels

The United States Lake survey reports the monthly mean stages of the Great Lakes for the month of July, 1927, as follows:

Lakes	Feet above mean sea level
Superior	602.63
Michigan-Huron	579.55
St. Clair	574.99
Erie	572.16
Ontario	246.01

Lake Superior was 0.36 foot higher than in June and it was 1.83 feet higher than the low July stage of a year ago. Lakes Michigan-Huron were 0.12 foot higher than in June and they were 1.01 feet higher than the July stage of a year ago. Lake Erie was 0.04 foot lower than in June and it was 0.96 foot higher than the July stage of a year ago. Lake Ontario was 0.10 foot lower than in June and it was 0.81 foot higher than the July stage of a year ago, and 0.34 foot below the average stage of July of the last ten years.

New Docks at Liverpool

(Continued from Page 33)

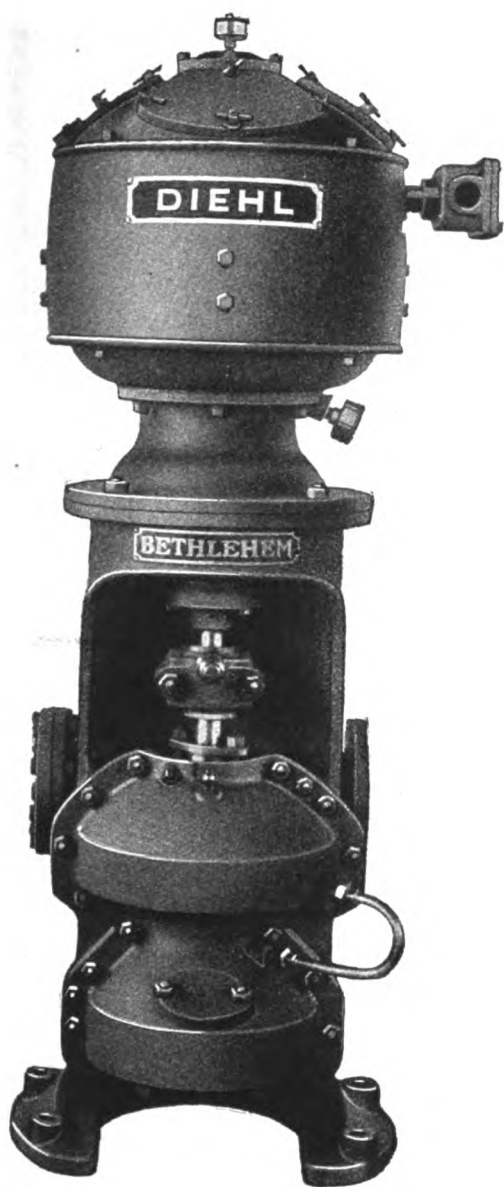
all lined with sheds and is furnished with the latest type of crane equipment. The accompanying illustrations show these mechanical hoists in position. They are movable electric cranes of one and one-half and one-ton capacity. There is also 5-ton movable steam cranes. Complete railway connections and sidings are provided from the new piers.

Large Berthing Space Provided

After entering the system through the lock from the river Mersey there is a half tide basin known as the Gladstone dock with an area of 22 acres. Opening out of this basin are two branch slips known respectively as Gladstone branch docks Nos. 1 and 2. Each of these docks or slips, as we would call them, are 400 feet wide and 1420 feet and 1285 feet long respectively. Branch dock No. 1 is separated from the Hornby dock by a space of an average width of about 400 feet. Connections between the new docks and the older system is made by the Gladstone-Hornby lock which is 645 feet long by 90 feet wide.

It is possible to berth in the branch docks taking into account all the four pier sides, four ships of 1270, 1300, 1325 and 1510 feet long respectively.

With this very fine addition to its already elaborate system of docks the port of Liverpool should continue to grow as one of the great seaports of the world. The enterprise, persistence, good sense and courage of the Mersey docks and harbor board might be emulated with great profit by port authorities in the United States.



"DIEHL"

Marine Type, Enclosed, Waterproof, Vertical Motor

is used for driving "Bethlehem" No. 2 Pervac extraction pump which is to be installed in the Southern Pacific steamer, "Dixie", now building at Federal Shipbuilding & Dry Dock Company, Kearny, N. J.

This is a continuous duty motor of 8 HP at 1500 RPM; maximum capacity of pump, 75,400 pounds per hour; vacuum in condenser 28"; discharge head maximum 18 pounds per square inch.

This motor is fitted with double Timken roller thrust bearings, guaranteed to carry 3800 pounds vertical thrust up or down. Motor bearings are enclosed, dust-proof, lubricated by compression grease cups. They require attention only at long intervals.

Diehl Manufacturing Co.

Elizabeth, N. J.
U. S. A.

DIEHL

MARINE REVIEW—September, 1927

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Recent Sales of Ships

THE shipping board has approved the sale of certain vessels and has arranged for selling certain lines as follows:

SHIPS SALE IN OCTOBER—On Aug. 16 the shipping board deferred until October the advertisement of the American France line and American West African line. Prior to this meeting the board had decided to postpone advertising the sale of the American Palmetto line until after May 31, 1928. This action was taken so that maximum service to cotton shippers should not be interrupted. The form of advertisement for sales of the American Scantic line operating between New York, Norway, Sweden, and the Baltic was approved by the board on Aug. 9, and the statement made that the line would be advertised for sale without delay. There are six vessels on the line aggregating 45,525 deadweight tons. A guarantee of continued operation for five years is required. This line is now operated out of New York by Moore & McCormack Inc. On Aug. 2, the board authorized a separation of the American Premier line and the American Dixie line, both cargo services operated out of Gulfport by the United Gulf Steamship Co. These lines are to be allocated to two independent operators made up out of the personnel of the original operating company. The operators serving the Texas ports will be known as the Texas Oceanic Steamship Co. Inc. and the New Orleans operators will be known as the Dixie Steamship Co.

PHILADELPHIA TERMINAL LEASE—The board on Aug. 9, authorized the Fleet corporation to sign a re-draft of the lease for the board's piers at Philadelphia to the Merchants Warehouse Co. of that city for a period of five years. The shipping board will receive 25 per cent of the gross operating receipts from the terminals or a minimum of \$125,000 a year. In addition the board received \$10,000 annually on account of improvements made to the lumber concentration yard adjoining the property.

COALINGA—The United States shipping board on Aug. 2 authorized the Union Steamship Co., Los Angeles, owners of this vessel, to transfer her American registry to Italian registry so that she may be sold to Ditta Luigi Pittaluga Vapori, Genoa, Italy. The vessel in question is a steam tanker. Authority to make this transfer is made with the stipulation that she will not be used for trade with Continental United States after her first outward voyage and also that the Union Steamship Co. shall execute an agreement with the shipping board making a definite commitment that a new tanker of not less than 12,000 deadweight tons of the most up-to-date and modern type be constructed in an American shipyard.

WILLIAM PENN—The board on Aug. 2 rejected an offer of the Hawaiian Steamship Co. to purchase the 12,358 deadweight tons freight motor ship, WILLIAM PENN for the sum of \$494,320. The vessel is now in operation between New York and Australian ports, on the Atlantic Australian line. The offer was rejected because the price is not adequate and because the ship is needed for the requirements of the fleet.

EASTERN TEMPLE—Steel cargo vessel of 5540 deadweight tons, at the time laid up at Norfolk, Va., sold to the High Seas Transportation Co., New York for the sum of \$95,000. Payment to be 10 per cent cash and the balance in ten equal annual installments.

EASTERN VICTOR—Steel cargo vessel of 8460 deadweight tons, at the time laid up at Norfolk, Va., sold to R. W. Malone, Washington, for \$186,000. In connection with all sales of ships the board stipulated the terms of payment on sales of vessels which have been broken out and have had repairs shall be 25 per cent cash payment while those taken from the laid up fleet shall be sold on the basis of 10 per cent cash payment.

WESTERN GLENN AND WESTMEAD—Steel cargo vessels of 8645 and 8541 deadweight tons respectively, laid up at the time at New York, sold to the Oregon Steamship Corp., Portland, Oreg., for \$285,000 under the usual terms.

POTOMAC—An ex-enemy passenger vessel of about 11,000 deadweight tons, equipped with two quadruple engines of 5600 indicated horsepower and five Scotch boilers designed to steam approximately 13½ knots on 103 tons of coal a day; with accommodations for about 350 first and 350 second class passenger as well as

a large number of third class and steerage; at the time in lay up at New York; sold to Phillip Edward Ittmann, 1 Madison avenue, New York City for \$50,000 in cash "as is and where is."

CHARTER OF VESSEL—On Aug. 16 the board approved the charter of a vessel, to the Daugh Ship Crane Co., upon which this company will install three patent cranes for experimental purposes.

World Markets

BELLAS—Single deck steamship, 4100 deadweight tons, 2570 gross tons, for about £22,000 to Abbey Line, Ltd., Cardiff.

ACASTA—Single deck steamship, 8000 deadweight tons, 5259 gross tons, for about £60,000 with 10 years' time charter, to Norwegian buyers.

ADNA—Single deck steamship, 7830 deadweight tons, 5197 gross tons, for about £60,000 with 10 years' time charter, to Norwegian buyers.

BUCCINUM—Single deck steamship, 8075 deadweight tons, 5237 gross tons, for about £60,000 with 10 years' time charter, to Norwegian buyers.

Moore and McCormack Buy Garland Ships

About the middle of August the Garland Steamship line sold to the Moore and McCormack Co. its entire fleet of six freighters. Neither the price nor the future operation of the ships were disclosed. The

names of the vessels are: ALBERT JEFFRESS, CAROLINIAN, EDGAR BOWLING, GEORGE ALLEN, JAMES B. DUKE, WILLIAM CAMPION and WILLIAM PERKINS, aggregating a total of 38,537 gross tons. The ALBERT JEFFRESS, in New York at the time of the sale, was taken over immediately by the new owners and the remaining five will be delivered as they arrive in New York. These vessels are now engaged in inter-coastal trade.

With the addition of these six freighters Moore and McCormack's fleet of American vessels now numbers fifteen. The company also has under charter an average of forty freighters largely American.

Diesel-Electric Tanker

The Atlantic Refining Co. who has been the leader in the application of diesel electric propulsion for tankers and who has had two years or more practical experience with this type is to build three additional diesel electric tankers abroad.

They will be sister ships of the one now building at the Scott shipyard, Greenock. This tanker is 12,500 tons deadweight and her engines will be of the Carels-Ingersoll-Rand type.

City of Dalhart Trials

THE motor ship CITY OF DALHART, recently converted from a steamship under the shipping board diesel conversion program, passed a successful trial trip off the Virginia capes July 25. The vessel maintained an average speed of 13.35 miles an hour during her six-hour speed test and tests of her equipment showed her to be ready for immediate service.

The ship left Newport News this morning for New York where she will load cargo destined for Australia. She will be operated on the Atlantic Australia line by the Roosevelt S. S. Co.

The trial was witnessed by a number of prominent people, among whom were Senator Hawes of Missouri, Commissioners Benson and Hill of the shipping board and Drummond Jones, vice president of Busch-Sulzer Co. Capt. R. Rose will command the vessel and the chief engineer is Geo. Brown.

The ship has been converted from an oil-burning steamer of 10 knots to a motorship of the speed shown on

her sea trials. She is equipped with a Busch-Sulzer 2-cycle single acting engine of 3000 horsepower and Worthington auxiliary diesel engines. In the main engine there are six cylinders each 30 inches in diameter and the piston has a stroke of 52 inches. The speed of the engine is 90 revolutions per minute.

The length of the ship is 416 feet. She is strictly a cargo ship but in connection with installing the diesel equipment accommodations for 15 passengers in well ventilated rooms having metal beds, electric fans and running fresh water, have been provided. These rooms are designed primarily to fill the needs of shippers desiring to send representatives to accompany large shipments of goods.

The main engine was constructed by the Busch-Sulzer Bros. of St. Louis, and the auxiliaries were built by the Worthington Pump & Machinery Co. Installation was done by the Newport News shipbuilding company. The total cost of conversion was \$829,750.